The Iron Age

A Review of the Hardware and Metal Trades.

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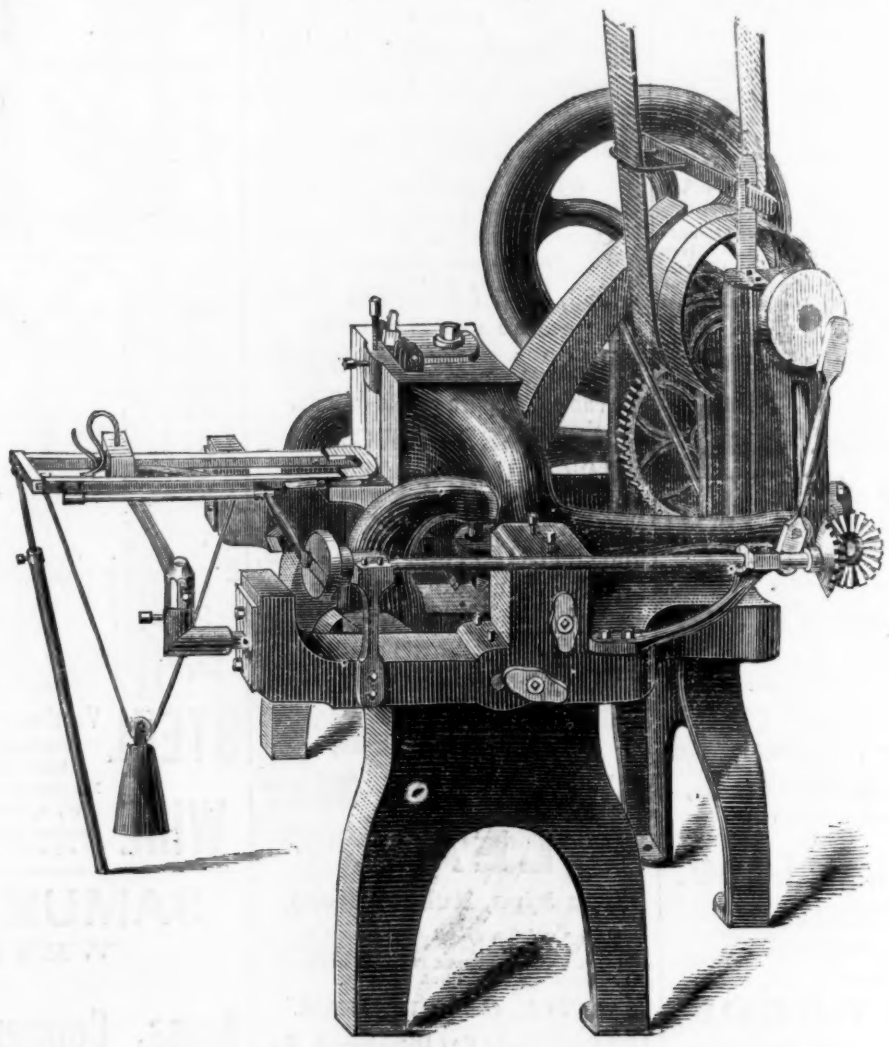
An Improved Self-Feeding Double Heading Nail Machine.

Our illustration represents an improved nail cutting machine now on exhibition at the fair of the American Institute, where it attracts much attention. The cut shows a side elevation of the machine, in which the chief working parts are clearly illustrated. Among the points deserving of notice we may mention the massive frame, which insures strength, stability and freedom from vibration; the cutter head, with the attendant cutter; the slide on which the nail plate moves for the purpose of feeding; the slide lever, which guides the plate; the weighted chain, which moves a slotted block to which the nail plate is fastened toward the cutter. The heading dies and levers on either side, which are covered by the frame, are the only parts which cannot be seen in the picture. When in operation, the feeding apparatus moves the nail plate toward the cutter with an alternate oblique motion, so as to cut the nail edgewise, and heading it also on either side, in conformity with the cutting movement. Two kinds of nails can be made without changing the dies or knives.

The machine runs smoothly in every part, and seems to possess a capacity for work somewhat greater than the duty now expected of it. In the saving of labor it promises to render an important service to the trade, as one man can attend four machines in constant operation.



AN IMPROVED SELF-FEEDING DOUBLE HEADING NAIL MACHINE.

Mineral Veins.

BY W. H. WALENN, F. C. S.

At the late meeting of the Iron and Steel Institute, at Barrow-in-Furness, Mr. Charles Smith, of Barrow, read a paper on the "Iron ores of Sweden," in which the following speculation occurs: "In several districts, especially in the Norberg mines, and to a less extent in those near Nora, the ore has a very singular striped appearance, caused by numerous veins or nearly parallel layers of crystallized quartz lying among the ore. May I be allowed to suggest that perhaps electricity may have been the chief agent in the formation of these mineral deposits? It is difficult to understand in what possible way they could be formed by volcanic reaction; and it appeared to me to be equally impossible to understand how these veins of iron ore, which dip steeply over immense areas of country, could owe their origin to water, without exhibiting some trace of aqueous deposition; especially when their centers are the purest part, while they gradually on either side pass imperceptibly into the surrounding rocks. It seems still more difficult to account, either by the aqueous or the igneous theory, for the finely veined ores of Norberg, consisting of thin parallel lines of magnetite and crystallized quartz. But what might be difficult, or impossible, for fire or water to accomplish, might, perhaps, be effected by electricity, if we assume that currents may have acted, in definite directions, for long periods of time, segregating the particles of iron oxide, which exist in a slight percentage throughout vast masses of many Swedish rocks."

This part of the paper was strongly attacked by Mr. C. W. Siemens, of telegraphic fame, upon the ground that he (Mr. Siemens) could not conceive any condition of things which would bring electricity into play in producing such deposits. He then went on to say: "The electric current caused a deposit of metal if it passed from one metal surface to another, through a solution containing the metal to be electrically decomposed in solution. Now, where would they find such conditions? The rock upon which the deposit of iron ore had taken place was not a conductor. The iron ore had not been in solution, unless it should have been a sulphate or other salt, and if it had been deposited under conditions which they might have some difficulty to conceive, but which, nevertheless might have existed, the deposit would have been metallic iron and not magnetic oxide; therefore he thought they should be very slow in accepting a speculation of a description which was not to be brought into direct and tangible connection with electric science as it existed and as it was known." An aqueous theory that depended upon denudation or stripping at an early period of the world's history, when the surface of the earth had to undergo a high temperature and pressure, was then advanced by Mr. Siemens as being the most probable.

Mr. Carne* gives the definition of a vein: "The mineral contents of a vertical or inclined fissure, nearly straight, and of indefinite length and depth." To properly study and analyze the true position of the question, whether electric force, as we now understand it, can cause deposits of magnetite or hematite, it will be necessary to ascertain what has been done hitherto in this direction by means of well-directed experiments, to find what materials are in the neighborhood of the ore, and what facilities there are for the production of these two minerals from the electro-deposited metal.

It would, at first sight, appear, from the above definition of a vein, that some of the conditions of electrolytic decomposition are present, such as a constant renewal of the mineral water, conducting and, possibly, exciting media, and constancy of condition once established. This may be the case in the Cornish mines, where there are ores and metals of various kinds and qualities, and where walls of clay frequently constitute the fissures, although, according to the most modern science, it might be perfectly possible to classify all the actions and reactions involved in the formation of a vein as purely chemical operations. In illustration of the possible electric currents in mines, Mr. Robert Were Fox,* prior to the year 1836, made some experiments in which he imitated the flucan courses in the mines of Cornwall, by placing various ores and metals in different saline solutions, separated merely by walls of clay; the voltaic circuit was completed by means of copper wire. "When a solution of sulphate of iron was substituted for the sulphate of copper in the cell containg the copper ore, the latter appeared at first to have on its surface a deposition of iron, and this becoming oxidated, in time formed an incrustation which resembled '*gossan*.'" The objections to the application of this experiment, with our present electro-metallurgical knowledge, to the formation of veins, especially to those in Sweden, are—Firstly, that the walls of the fissures are of quartz, and, therefore, non-conductive of electricity; secondly, that the absence of all other ordinary metals in the metallic state, or in any state that is conductive of electricity in the neighboring strata, does not favor the development of local electric action; and, thirdly, that it is difficult (even supposing that the "earth currents" of telegraphy were sufficiently constant in direction and in force) to realize in practice the completion of the electric circuit, which the working of the experiment implies—it is well known, however, that the earth currents are most capricious and variable in direction and power. It is also worthy of particular notice that gossan is not a definite chemical compound, but is variable in its composition; it generally contains the ores of other metals beside iron. Another important point in reference to the validity of the conclusions that Mr. Fox draws from his experiments is, that he takes it for granted that east and west fissures are predisposed, by their position in reference to the direction of the magnetic forces of the earth, to avail themselves of the electrical currents thereby supposed to be induced; the theory of thermo-electric earth currents also seems to him to favor this hypothesis. Allowing, for the moment, that these two causes are operative (which is not verified by the telegraphists), Mr. Fox's idea that the electric force necessary to decompose mineral waters must be exerted in the direction of the length of the fissures which they avail themselves of for outlet from a given source, is not tenable, for the only true electric-metallurgical circuit that could be formed would be from one wall of the fissure, across the flowing water to the other wall, and in his experiment imitating the flucan courses he evidently carries out this idea, thus, in reference to east and west fissures, denying his own cosmic theory.

This notice of the formation of minerals would be incomplete without some remarks upon the works of Edmond Becquerel and of Andrew Cross. Becquerel* has obtained, from a solution of the nitrate, suboxide of copper, in the presence of metallic copper and of protoxide of copper; also protoxide of lead, in a somewhat similar manner; in each case electric condition was the cause of the decomposition. Andrew Cross† obtained crystals of arragonite and of carbonate of lime. Neither of these experiments obtained iron deposits; Cross used a water battery of more than 2000 pairs of plates.

A question kindred to the above, in relation to iron ores, was also answered by Mr. Siemens. He said, with regard to the dip of the needle over a field of magnetic ore, that he "thought it was quite natural and evident that the needle must dip more or less as they approached either one end or the other of the magnetic field, or the magnetic deposit. Regarding the whole deposit as to the magnetic needle, one end of the deposit would be positive, and the opposite end would be negative—the one would be the north pole, and the other the south pole of the magnetic needle, which was deposited below ground, therefore if they traveled over that deposit with a compass needle—a dip needle—they would find the north pole would dip down to one end, and the south pole to the other end, whereas in the middle of the deposit no dip would take place. That would explain the reference in the paper of Mr. Smith, without implying that the ore over which the needle did not dip was of a different constitution to the ore over which the needle did dip either with the south end or the north end."

It will tend to a clear view of the use of the dipping needle in the discovery of iron ore if we remind the reader of some of the more recondite of the laws of magnetism. A bar magnet of homogeneous steel and well magnetized will have two poles—one north (pointing nearly toward the northern portion of the heavens), the other, a south pole near the extremities of the bar. This directive tendency or force is best shown by freely suspending the magnet at its center of gravity, the said center being ascertained before imparting magnetism to the bar. If, however, the bar be not homogeneous, and the magnetic influence be exerted in a variable manner upon it, it may have more than two poles, and these not necessarily at the extremities of the bar.* The latter condition of the bar is called by English writers on magnetism *consecutive poles;* by the French, *points consequens;* and by the Germans, *folgepunkte.* The following is a sufficient account of them: "The magnetic center, or the limit between the polarities, is not always in the middle of the bar; it is generally nearer that end which is presented to the magnet. This difference is greater as the magnet is weaker and the length of the bar increases; but when the bar exceeds a certain length (which depends on the strength of the magnet), then the bar acquires several successive poles, viz., when the north pole of the magnet is contiguous to one of its extremities, that extremity becomes a south pole; a few inches further on you will have a north polarity; then another south polarity, and so on. In this case the first magnetic center comes very near that end of the bar which stands next to the magnet, and other magnetic centers are formed between every pair of successive poles; those successive poles become weaker and weaker in power, according as they recede from that end of the bar which is contiguous to the magnet, so that, in a pretty extended bar, they quite vanish long before they come to the further end of it. Hence, if one pole of a magnet be applied to the end of a long bar, the other end of the bar will not thereby acquire any magnetism." Consecutive poles are due to several causes, such as an overexertion of the coercitive force, as when we attempt to saturate a bar of steel of too great a length. According to Coulomb, consecutive poles are always formed in needles of tempered steel where the length exceeds thirty times the diameter. Or if the steel be of too hard a temper, or of unequal temper, these points are likely to occur from the unequal distribution of the coercitive force. Bearing these points in view, it does not appear that of necessity the needle will dip precisely at one end of the magnetic lode, or precisely at the other, or that it will not dip at some one or more intermediate points, for the dipping at the extremities of the vein could only occur if it (the vein) were perfectly continuous and perfectly homogeneous, as in the case of the well constituted and well magnetized bar magnet. This is evidently the instance that Mr. Siemens had in his mind whilst making the otherwise correct remarks that he put forth. We say the otherwise correct remarks, because between two poles (always of opposite names) the needle will not dip, although the material may be magnetic. It is most probable that veins of magnetic iron ore are mostly non-homogeneous, and therefore have consecutive poles, which would induce a more or less frequent dipping of one or other end of the needle, for the needle is in the condition of the bar magnet first described. Another point that may influence the dipping of the needle, and thence the detection of subterraneous ore, is the fact that the most general position of the veins is nearly vertical, and if the second and lower pole, in the series of consecutive poles, were very far from the surface, the dipping would only occur once, namely, at the uppermost end of the vein.

Another most remarkable point in the Swedish ores, alluded to by Mr. Smith and brought out by Mr. Brogden, M. P., is the formation of a deposit of the oxide of iron at the bottom of certain lakes which replenishes itself in the course of five or six years. Mr. Brogden says that these ores are "literally fished out from the bottom of the lakes," and that they consist "of a very fair deposit of the oxide of iron, and those lakes, if left quiet, in the course of five or six years," again contain "a surface of a similar character to that which was taken out before." There is no evidence that this ore exists in veins, or that it is magnetic, but it is noticed here to complete the remarks on Mr. Smith's paper, as being an almost isolated instance in mineralogy of a quickly growing ore, and to draw attention to the soundness of the observations of the president of the Institute (Isaac Lowthian Bell, Esq.) thereupon. He said: "There was no doubt that in all strata more or less iron existed in considerable quantities, and immediately in contact with portions of those strata was a vast quantity of vegetable matter, and there was no doubt whatever that the acids which were formed during the process of vegetation, and during the decomposition of vegetable matter, had the power of dissolving iron, but compounds of iron formed under such circumstances were of an extremely unstable character; that was, supposing they had a bicarbonate of iron or any other compound of iron in which a vegetable acid formed the solvent and iron the base, it was well known that such iron compounds were rapidly decomposed by the atmosphere, and the iron itself peroxidized and thrown down as a hydrated peroxide, or in other words, a brown hematite."

In conclusion, it would appear to us that the electrical theory of the formation of mineral veins may be true in certain instances, but the probability of this being the general solution of the question is very remote. In substance, from the evidence attainable, it would seem that chemical action, aided by temperature and pressure, is sufficient to account for the peculiarities to which Mr. Smith has directed attention so ably and so laboriously, and that Mr. Siemens' views thereupon are sound, but that with respect to the dipping of the needle Mr. Siemens forgot to take into account the want of absolute homogeneity in veins of magnetic ore.—*Iron.*

* Taylor's Report, British Association Reports, Ambridge Meeting, 1833.

* Fourth Annual Report of the Royal Cornwall Polytechnic Society, A. D. 1836.

* Traite d'electricite, by Edmond Becquerel, A. D. 1855.

† Sturgeon's Annals, vol. I., A. D. 1837

* "On Consecutive Poles in a Magnet," by Charles Tomlinson, F. R. S., in the *Chemical News*, April 29, 1870.

A Large Plate Train.

With reference to the unusually large roll train lately made by Messrs. A. Garrison & Co., of Pittsburgh, for the Union Iron Company's works, at Buffalo, we have the following particulars: The train consists of one pair of sand, or soft, rolls, 31 inches diameter and 96 inches long, each roll weighing 2500 lbs.; also one set of chilled finishing rolls, between which is placed one of Lauth's patent intermediate rolls of 17 inches diameter. The train will be furnished with all the best appliances for manipulating the iron. Among these are steam cylinders placed under the foundations, for raising and lowering the fore plates, also simple and compound levers for adjusting the top and intermediate rolls. The train is driven by thirty-one double spiral pinions, which prevent "back lash" on the rolls. The chilled rolls in this mill are said to be the largest ever made, either in this country or Europe. The total weight of the train is 340,000 lbs., or 170 tons. A plate mill of this size is a novelty in this country.

The *Colliery Guardian*, in speaking of the French iron trade, says: It was announced recently that MM. Dupont and Dreyfus proposed to establish in their Pompey works a tram for plates on the differential system of Lauth. We learn now that MM. Delattre & Co., of Terriere-la-Grande, near Maubeuge, have been charged with the execution of the new rolling mill.

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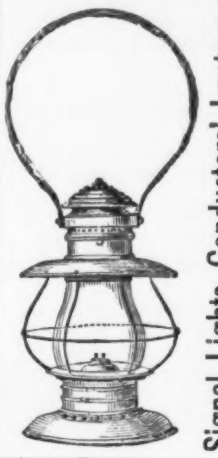

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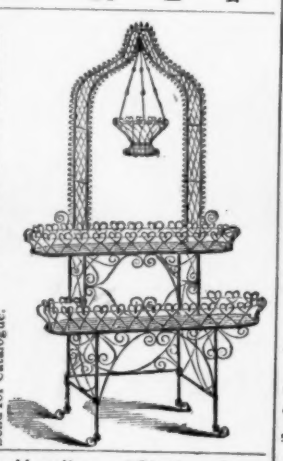

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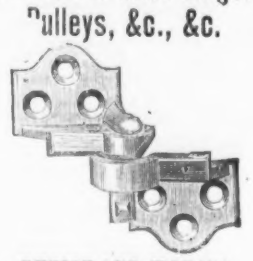

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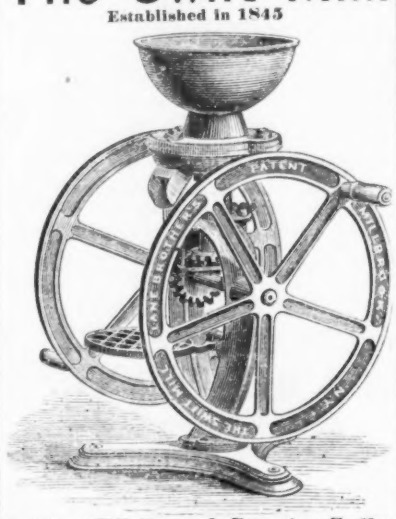

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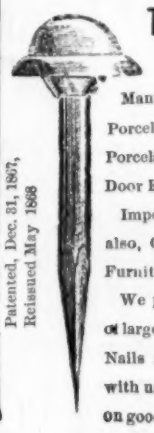

Patented, Dec. 31, 1867, Reissued May 1868

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We take the following from *Iron:*

If there be one principle of industrial economy more firmly established, and of more universal application, than another, it is that which insists on the economic advantages of a division of labor. In every department of industry we find the division of labor and its logical sequence, the specialization of manufactures, carried out to an incredible extent and with unfailing success. Every one is familiar with, and appreciates the results of, that minute subdivision of trades (upward of a hundred in number), each confining itself to the elaboration of a single portion of that wondrous complex of mechanism and marvel of cheapness, a modern chronometer; but there seems a certain reluctance in accepting in its entirety the proposition that, if any product, whether material or dynamic, is in daily requisition by a large number of individuals congregated within a small area, their requirements will be most efficiently and economically supplied, by handing over the whole business of supply and manufacture to a single individual or corporation, whose whole attention can be concentrated on perfecting the means of production and distribution. This once fairly stated seems, however, so obvious an axiom that it is unnecessary to insist on it, further than to point out, as instances of the practical embodiment of this idea, the system on which water and gas are supplied, and refuse removed in our towns. With the advantages of these forms of centralization we are now so familiar that no one would be guilty of the folly of rejecting their use and depending on his own isolated exertions. It requires an effort even to conceive the possibility of every householder in the metropolis, for instance, being obliged to fetch his own water (or buy it at the door), to make his own gas, and undertake the removal of his household refuse independently of his neighbors. Such a state of affairs would be considered intolerable, and rightly so, by the present generation, since it has experienced the benefits of an arrangement which brings to, and distributes through, our houses light and water in a constant and automatic supply, while superfluous matter is removed with a minimum of trouble and inconvenience. In the matter of *heating*, however—a service in as universal request as a water supply—we find existing provisions utterly behind the requirements of the age in every particular, and, indeed, in no better condition than they were a century—nay, several centuries, ago.

Though the home manufacture theory has been exploded in every other department of urban social life, here it reigns supreme; and every man still may boast not only of being his own heat manufacturer, but of having in each room a separate factory in which the whole process is carried on—but at what a cost?

The raw material is indeed brought to the consumer's door, but in the most inconvenient form, and by a system of transport at once extravagant and inefficient; its solid condition rendering the pneumatic or hydraulic methods of distribution inapplicable. So that, in place of being able to draw at any moment from an unfailing reservoir a supply exactly adequate to the varying requirements of the individual, it is necessary to store up a supply sufficient for many weeks' consumption, locking up capital and wasting space; while, owing to the fluctuating character of a small consumption, one's calculations are pretty sure either to fall short of, or exceed, actual requirements.

In view, then, of the superiority of a well-arranged system of pipe distribution, as compared with the existing primitive apparatus of coal wagons, cellars and scuttles (which are in a measure necessitated by the use of a solid fuel), any fuel which does not admit of being so carried should have very great compensating advantages to justify its use. The question then arises, is coal so much the best available form of fuel as to overbalance the drawbacks of want of portability, weight and bulk, inseparable disadvantages from which a combustible gas would be free?

If it were possible to effect the complete combustion of coal, and in addition to utilize the whole of the heat produced, the thermal value of a fair average coal would be nearly, or quite, equal to that of any practicable substitute, the calorific power of hydrogen being for ordinary purposes purely illusory. But it would be Utopian to expect ever to attain to such a result on a small scale, and even with the special contrivances and constant attention which can be afforded only in a large establishment, it could only be approximated to; as it is, the use of coal in an average fireplace implies the loss of at least 50 per cent. of the total potential heat. It should be borne in mind that the heat absorbed by the products of combustion may be considered as lost for all purposes of sensible thermal effect, unless elaborate devices be resorted to for its recovery, whence it by no means follows those bodies which have the highest calorific power, have a corresponding value in the scale of fuels for domestic purposes. Thus the theoretic calorific intensity, or sensible temperature, resulting from the combustion of coal, varies between 2200° and 2400° C; that of carbonic oxide is variously reckoned at from 2100° to 2800° and upward; while that of hydrogen, owing to the high specific and latent heat of its product of combustion, and notwithstanding its higher "calorific power," is little over 2000° C.; the best sorts of dried peat give a temperature fully equal to that of hydrogen, but wood has a much lower thermometer effect. It may be said that these figures show coal to have as high a value as carbonic oxide, for instance, but they represent not the actual temperatures, but only the maximum theoretical possible capabilities of the respective bodies, without making any allowance for loss, and on the assumption that the combustion takes place in the minimum of time. It is when these two factors of time and loss, which play an all-important part in the practical application of fuel, are taken into account that the palm must be yielded to combustible gases in preference to solids.

It may seem to some that an allowance of 50 per cent. is an excessive estimate of the waste of a coal fire, but far from this being the case, it is probably too low a percentage. The main causes of waste are imperfect combustion, the necessity of keeping up an excessive draught and the quantity of air required to be drawn through a coal fire to maintain its combustion. The loss under all these heads with a well arranged gas fire is almost *nil*. The loss from imperfect combustion is due, first, to the escape of volatile hydro-carbon vapors; secondly, to a portion of the carbon being burnt only to carbonic oxide; and thirdly, to the loss in coal dust and clinker: of a total of 80 per cent. carbon, 20 per cent. is frequently lost under the first and third of these forms. A gas such as carbonic oxide, or carbonic oxide mixed with hydrogen, would be entirely exempt from the waste arising from imperfect combustion, as, owing to the mobility of its atoms, the air has free access to every separate particle of the fuel, under conditions the most suitable to promote active chemical union. This same property of mobility allows of perfect combustion taking place when only just so much air is passed through the fire as suffices to supply the exact quantity of oxygen necessary for combination with the fuel, while a coal fire requires at least double the supply of air that the chemical exigencies of the fuel would call for, on account of the difficulty the air experiences in permeating the solid lumps of which the firing consists. Yet a further squandering of caloric occurs in the chimney, which has to be kept at an excessive heat to enable it to draw this superfluous bulk of air through the fire, on its way to dissipate its heat burden in the atmosphere.

That gas produced at a distance from the furnace in which it is burnt can be substituted with the best results for the direct use of the fuel which gives rise to it, has been proved to practical demonstration by the Siemens' furnace, which is heated by gases only some 40 per cent. of which are combustible.

We have before us a proposal for heating towns by "pyrogen" gas, which consists of a mixture of nitrogen and carbonic oxide, three-fourths by weight of the mixture consisting of the latter gas. This mixture is said to have a temperature of combustion of 2700° C., and it is suggested it should be used to heat some good radiating substance, such as fire clay, in an ordinary grate, by which means heat would be radiated out as in the present coal fire. A fact which must always militate strongly against the use of carbonic oxide, without special precautions, to prevent leakage, viz., its poisonous character, would probably render it more expedient to confine the actual combustion to a single apartment, trusting to air traversing heated pipes of earthenware (to prevent the possibility of carbonic oxide diffusing through) for the equable transmission of the heat through the house. One can hardly fail to speculate on the applicability of this new pyrogen to lighting as well as heating, whether by making the lime light a commercial possibility, or by the addition of a small proportion of a volatile oil, which would cause it to yield a light as bright as that of coal gas, at a much less cost. Such a consummation as that our light and warmth should be derived from the same source is indeed one to be devoutly wished for, and is in entire accord with the teachings of science.

The scheme we have alluded to is confessedly only tentative, and its author, an F. R. S. not unknown in the domain of practical metallurgy, will doubtless make such modifications in his process as the practical trials about to be made may suggest.

We are chiefly concerned in pointing out in a general way the superiority of a well selected gaseous fuel in crowded centers, and are far from adopting the defense of any particular system. The proposal more immediately under consideration appears to us, whether rightly or wrongly, to be defective in the following points. The noxious properties of carbonic oxide are ignored; the proposed method of gas generation would not produce nitrogen and carbonic oxide alone, but in addition a not inconsiderable proportion of carbonic acid; no sufficient allowance is made for the absorption of heat during the vaporization or solution of carbon during the deoxidation of the carbonic acid—how considerable this absorption may be, is evidenced by the decrease of temperature in that zone of the blast furnace in which a similar reduction takes place; the heat of combustion is also probably overstated; and, finally, the suggested method of regenerating the manganese by throwing the Mn_2O_3 into water, or passing air over it, till manganic dioxide is reproduced, is, to say the least, a startling novelty. Nevertheless, we believe the vitality of the idea is strong enough to surmount the defects we have indicated, and the magnitude of the proposed revolution in practical thermics is so great that a satisfactory solution could hardly be hoped for except at the expense of numerous failures and disappointments; yet the importance of the subject may well reconcile one to its difficulties.

The new proposal is thus contrasted with the present system in its application to London:

Five millions of tons of coal and coke are at present carried to every man's door by means which are rude, cumbrous, inconvenient to the public, and involve a needless waste of capital and of labor. When arrived there, three-fifths of it are totally wasted.

Instead of this, not quite seven millions of tons of gas are conveyed by steam power along what is in effect a railroad, not only to every man's door, but to every man's fire place, and at a comparatively nominal cost.

Every combustible particle of it, that is, two-thirds of the whole, is efficient in producing heat, which heat may be further utilized and distributed down to its lowest unit above the mean surrounding temperature, in warming and in ventilation. The products of combustion, instead of poisoning the air and darkening the sky, give nourishment and vigor to vegetation, and having by it been in turn partially transformed, are evolved in the oxygen of respiration, to give fresh life and vigor to man.

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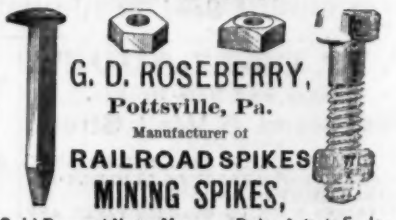
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New Patents.

We take from the records of the Patent Office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN AUTOMATIC VALVES FOR BLAST FURNACES.

Specification forming part of Letters Patent No. 154,390, dated August 25, 1874, issued to John M. Hartman, of Philadelphia.

The invention consists, first, of an automatic double face valve, in combination with a valve chamber having an upper and a lower valve seat; second, of a valve cap or its equivalent device, in combination with a valve chamber and an automatically working valve; third, in the combination of a valve chamber, a valve cap, an automatically working valve, and curved or inclined inlet and outlet pipes.

Figure 1 is a side view. Fig. 2 is a vertical longitudinal elevation. Fig. 3 is a top view.

A is the valve body; B, the valve chamber; C D, the inlet and outlet pipes, and E the valve cap. The chamber B must be of a capacity to freely pass the blast. The inlet and outlet pipes C D are curved or inclined to and from the chamber B, to give the proper direction to the gas. F is a double face valve in the chamber B. Its bottom face, *a*, seats on the lower valve seat, *b*. Its upper face, *a'*, seats against the upper

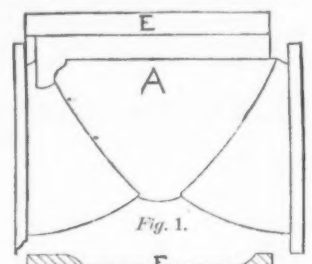

Fig. 1.

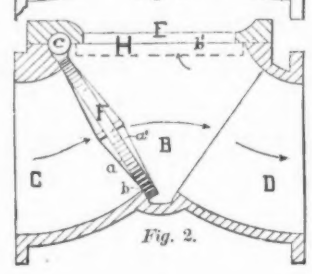

Fig. 2.

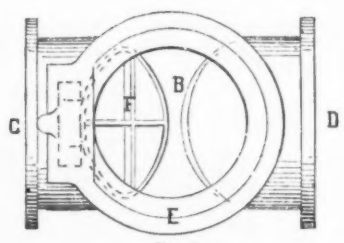

Fig. 3.

IMPROVED AUTOMATIC VALVES FOR BLAST FURNACES.

valve seat *b'*. To facilitate arranging the valve in place, and to enable it to be readily repaired and the valve seats reached, the chamber B is provided with a movable ring or open cap, E, which can be easily taken off and the chamber B opened without first separating the valve body from the blast pipe. The center of turning, *e*, of the valve is shown partly in the top of the chamber, and partly in the cap. The upper valve seat, *f'*, is in this instance on the bottom of the ring or cap E. The gas escape opening H is formed by the ring E, and an opening in the top of the chamber B. The curvature of the inlet pipe C enables the blast to impinge the valve F at the proper angle for lifting and closing it against the gas escape H (dotted lines, Fig. 2), which prevents the blast from escaping. When the blast is thrown off the valve drops on its seat *b*, which closes the opening of the blast pipe and opens the gas escape H. The curvature of the outlet or discharge pipe D from the valve chamber to the furnace prevents the backing gas from getting beneath the valve F, which would keep it from closing on its lower seat and prevent the gas escape H from being opened.

In the operation of a blast furnace experience has demonstrated that when the blast is thrown off the gas from the furnace is liable to accumulate in the blast pipe, in the hot blast, or in the air receiver. By igniting and exploding it causes the most serious and destructive results. The valve F, when the blast is thrown off, closes all communication between the blast pipe and the furnace, and escapes the accumulated gas through the gas escape H.

Claim—1. An automatic double face valve, F, in combination with a valve chamber, B, having an upper and a lower valve seat.

2. The combination of a double seat valve chamber, B, an open cap or ring, E, a double face automatic valve, F, and curved or inclined inlet and outlet pipes C D.

IMPROVEMENT IN THE MANUFACTURE OF STEEL BY THE OPEN-HEARTH PROCESS.

Specification forming part of Letters Patent 155,136, dated September 22, 1874, issued to Thomas S. Blair, of Pittsburgh., Pa.

This invention relates to the production of cast steel by the open-hearth process.

At the present time the most generally-adopted method is what is known as the Siemens-Martin process, in which a bath of cast iron is first decarburized by the addition of wrought iron, and finally recarburized by the addition of ferro-manganese and spiegeleisen.

The pig or cast iron bath is employed because the carbon contained renders the metal of easy fusion, and supplies whatever of that element may be necessary in addition to the quantity imparted by the triple compound of iron, carbon and manganese used in the recarbonizing step.

The object of this invention is to provide a substitute, in whole or part, for the cast iron heretofore employed; and to this end the method is to take iron sponge and mingle with it in any convenient way one or more of the substances known to produce rapid absorption of carbon by iron, in what is called "case-hardening," together with the desired per cent. of finely pulverized carbon. The mixture thus formed can then be melted alone in the open-hearth furnace, or along with cast iron previously fused.

The sponge used is the product obtained by treating oxides of iron in contact with carbon at a suitable heat, and out of contact with the atmosphere; it is practically metallic iron. It has an open spongy texture, whereby it is rendered extremely sensitive to chemical action, and this characteristic of the sponge is taken advantage of to obtain a carburet of the desired grade or quality, the rationale of the operation being that the iron sponge, by virtue of its sensitiveness and the presence of the case hardening substances (such, for instance, as yellow prussiate of potash), takes up carbon from the carbonaceous substance with which it is mixed before the temperature is sufficiently high to melt the mass. In this way, to whatever extent it thus acquires carbon, the necessity of cast iron is dispensed with.

The invention, therefore, consists in substituting iron sponge for cast iron in the open hearth process, by imparting to the sponge the required per cent. of carbon by putting the carbon in contact with the iron sponge, accompanied by accelerating agents, such as are used for case hardening.

The iron sponge is intimately mixed therewith 5 per cent., by weight, of carbonaceous matter, such as finely pulverized charcoal and one-half of 1 per cent. of an accelerating agent, such as yellow prussiate of potash. The mass is then, while cold, compressed by suitable means into blooms having sufficient cohesion to be charged into a heating furnace (auxiliary to the open hearth melting furnace), where they are brought to a red heat first, and subsequently raised to as much higher heat as is found necessary. From the auxiliary or heating furnace the blooms are charged into the melting furnace, tests being taken from time to time in the usual way, and blooms of carburized or uncarburized iron sponge employed, as indicated by the tests, until the mass is ready for the spiegeleisen or ferro-manganese, after which the operation is conducted in the usual manner.

Upon withdrawing the blooms from the auxiliary or heating furnace, and transferring them to the melting furnace, the auxiliary furnace may be charged with a new lot of blooms, to be heated while the previous lot is being melted down, and thus the process be made continuous.

The several steps set forth may be somewhat varied, especially as regards the case hardening ingredients (of which prussiate of potash is simply mentioned as an example), and the proportions thereof and of the charcoal used, without departing from the spirit of the invention, the essential feature of which is the method of imparting the carbon to the iron.

The advantages claimed for the process are as follows: First, the economy resulting from substituting the iron sponge, which can be produced at less cost than suitable cast iron; and, second, the improvement in quality of the cast steel, the iron sponge containing absolutely no silicon, while the pig iron always contains a notable quantity. The open hearth steel heretofore produced has always had this advantage as compared with crucible steel, that pig iron was a necessary element in its manufacture, while crucible steel, for all fine purposes, is made without it.

Claim.—1. In the open hearth process, the above described method of producing cast steel from iron sponge by imparting carbon to it, by putting the carbon in contact with the iron sponge, accompanied by accelerating agents.

2. In the open hearth process, the substitution of iron sponge, carburized in the manner described, for a portion of the pig iron heretofore used.

Report of Inspections made by the Hartford Steam Boiler Inspection and Insurance Co., for August, 1874.—Number of inspection visits 1223. Boilers examined 2578, of which 806 received thorough internal and external examination. Hydraulic pressure was applied in 184 instances—mainly new boilers in the yards of the manufacturers. The defects discovered were, 1183; many being unimportant and not looking toward immediate danger, while 322 were of a character calculated to cause apprehension, and accident was liable to occur at any moment. Defects found in furnaces were 68—11 dangerous. Fractured plates 58—37 dangerous. Burned plates 57—16 dangerous. Blistered plates 203—26 dangerous. Deposit of sediment 199—50 dangerous. Incrustation and scale 180—30 dangerous. External corrosion 62—31 dangerous. Internal corrosion 33—6 dangerous. Internal grooving 15—4 dangerous. Water gauges defective, 45—9 dangerous. Blow-off defective, 17—7 dangerous. Safety valves overloaded 43—20 dangerous. Pressure gauges 142—45 dangerous, varying from —14 to +40. Boilers without gauges 82—1 dangerous. Cases of deficiency of water 6—3 dangerous. Braces and stays broken 58 cases—26 dangerous. Boilers condemned and unsafe to run 11.

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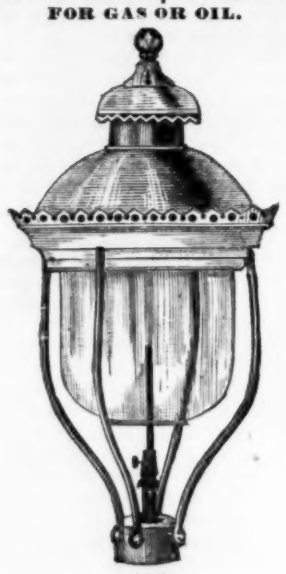

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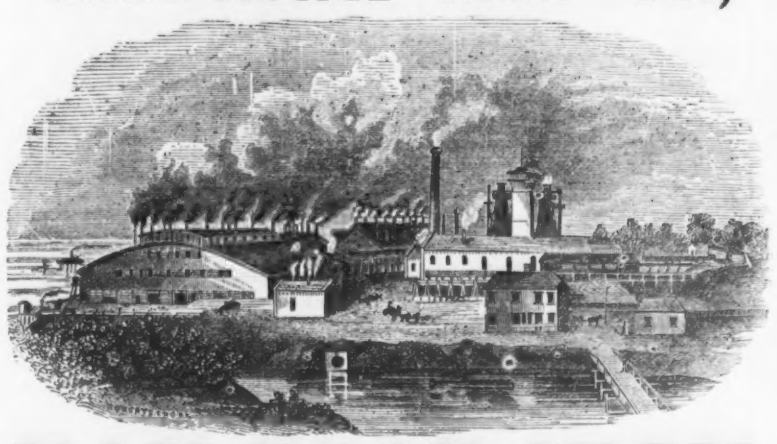

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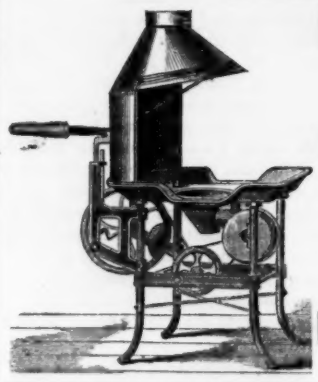

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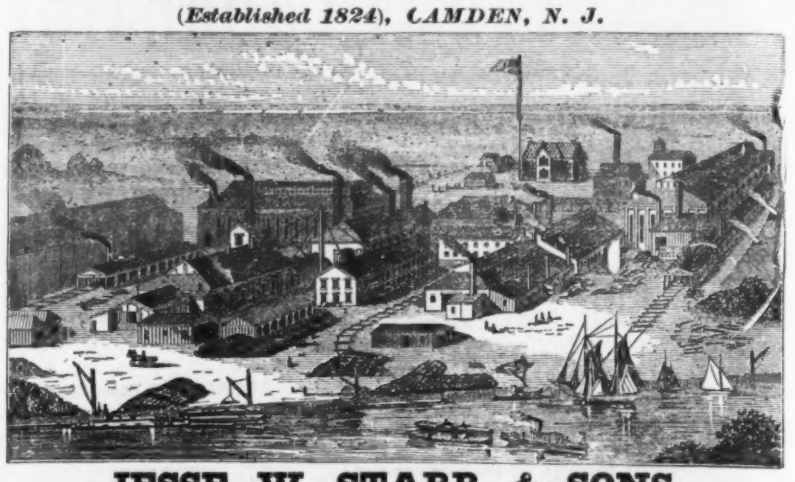

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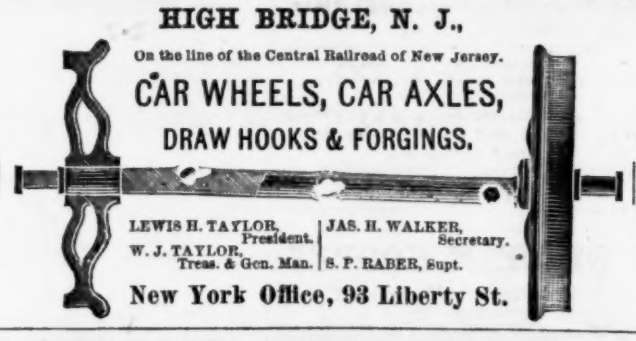

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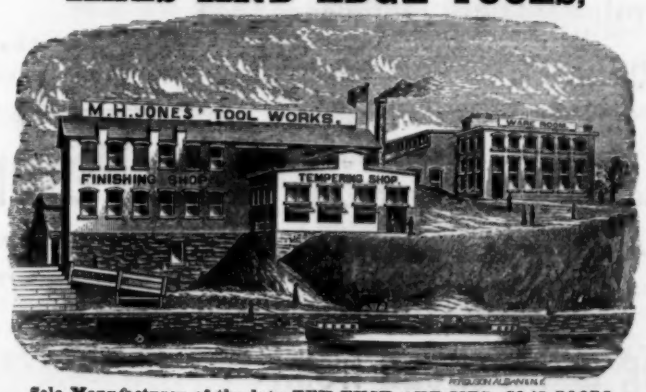

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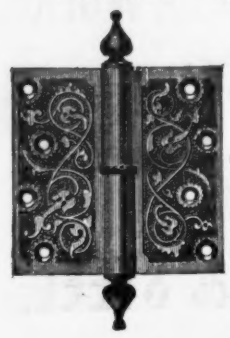

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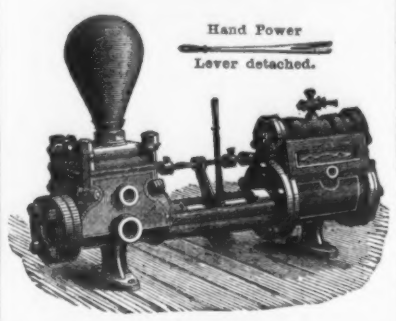

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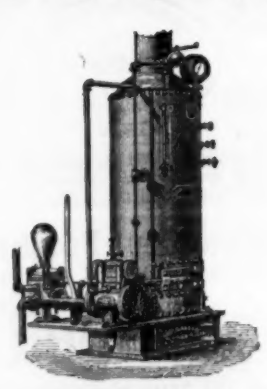

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Mechanical Puddling.

The following is an abstract of a paper lately read before the British Society of Engineers, by Mr. Perry F. Nursey:

The necessity of relieving the puddler from the severe and exhaustive labor which his work imposed upon him, and to which use could not habituate him, had become more and more imperative. Those who best knew what that labor was, knew also to term it degrading toil was by no means sensational. They wondered then that men, having any pretentions to intelligence—and a good puddler must possess some intelligence—should tax their physical energies for hours together before a fierce furnace, stirring the rolling molten and viscous mass of glowing metal. It was true that attempts had been made from time to time to aid the condition of the puddler by the introduction of mechanical improvements to manual labor; but this only met the difficulty half way, and, like most things done by halves, little, if any, success had attended these attempts. What was demanded was a radical change, not in the process of puddling, but in the means of effecting it; and this change was now very imminent, and, in fact, to some extent it had already been carried out in practice, having been brought about by the successful application of mechanical principles, guided by the light of the highest science. But at present the process of puddling—that was, converting cast iron into malleable iron—continued to be performed, for the most part, much in the same manner as it was exactly 90 years since, when the illustrious Cort first gave it to the world.

After giving a detailed account of the ordinary process of puddling, Mr. Nursey went on to say that the labor in the system at present adopted was most severe and exhaustive. It was hardly a matter of wonder, then, that ironmasters were complaining of the want of good puddlers, and even of having no puddlers at all. Attempts had been made to reduce the amount of physical labor involved in manual puddling by many inventions, notably among which was that of M. Dormoy, and the Joe Pickles steam puddler in use by the Kirkstall Forge Company, both of which relieved the puddler in the severer part of his work by means of steam worked rabbles. Puddling with steam had been several times experimented upon, and the invention at the time was considered to be a decided improvement, producing, as it did, a larger quantity of iron. After an extensive trial, however, it was discovered not to be working satisfactorily. The first to design a revolving puddling machine were Messrs. B. P. Walker and J. Warren, who, in 1853, proposed a circular fire-brick chamber cased with iron, and rotating on its horizontal axis. Messrs Walker and Warren did not, however, carry their invention into practice; but they were followed by Mr. W. H. Tooth, in conjunction with Mr. W. Yates, who endeavored to work out their design to a practical issue. Mr. Tooth's invention was taken up by Mr. W. Menelaus, who erected revolving puddling furnaces at the Dowlais Iron Works, and endeavored by all possible means to make the system successful. He very nearly did so, but was defeated in the end by the lining of the furnace, which he could not get to stand. Mr. E. Williams, of Middlesborough, however, experimented in the same direction, and found that he overcame the instability of the lining by melting cinder and scale from the shingling hammer together, and pouring them, while liquid, into the chamber of the revolving puddler. In the United States, Mr. S. Danks introduced a mechanical puddling furnace, which was considerably adopted there, and attracted considerable attention in England, where, after careful exeriment, it had been adopted at several works. Its success had grown from small beginnings; and in England it was first brought under the notice of ironmasters through the Iron and Steel Institute, who instituted a commission to proceed to America to report upon it. The results, as arrived at by the commission, were reported to the Institute, and were eminently satisfactory, establishing beyond a doubt the utility of the system. Mr. Jones—one of those who formed the commission—stated that twelve of Danks' furnaces would puddle as much as fifty ordinary furnaces. Mr. Leicester, also of the commission, entered into elaborate details of the machine; and it was his opinion that in the working of it more care and intelligence were required than physical labor, there being a great saving of manual labor effected by the whole process. The satisfactory report led it to be tried by many eminent firms, amongst those being Mr. Robert Heath, M. P., in North Staffordshire. The Erimus Works, Middlesborough, too, had caused to be erected some of Danks' furnaces; but it was to be regretted that in a commercial point of view these furnaces had worked unsatisfactorily in England, though hopes were still entertained that the process would prove satisfactory in a commercial sense, and every endeavor was being used to bring about the desired result. In his address to the members of the Iron and Steel Institute, Mr. I. Lowthian Bell had clearly defined the cause of the failure, but had stated many hopeful opinions with regard to the furnace in question. The principal defects, he pointed out, were want of durability in the lining, mechanical failure, and want of skill on the part of the workmen engaged; but those interested seriously hoped that these causes of failure would be removed. In America, too, the Danks' furnace had not proved altogether successful, the system having been abandoned by General Wilder, at Chattanooga. Mr. Spencer's attempts to solve the question of mechanical puddling at West Hartlepool were then favorably noticed, as were also those of Mr. Sellers in the United States, although neither had yet proved commercially successful, which proof demanded that an invention should be as capable of universal application as was the ordinary puddling system. The rotative furnace of Dr. Siemens, who had that day been elected honorary member, was next reviewed, and was stated to have worked out many improvements. It was adopted by Sir John Alleyne at the Butterley Works for mechanical puddling, and was at present under probation, no definite and reliable result having yet been obtained.

It was with satisfaction that the writer approached that part of his subject which dealt with the Crampton powdered fuel rotary puddling furnace, the results of its successful working in the Royal Arsenal, Woolwich, being exemplified by a series of samples of iron and steel of exceptionally high quality. The mechanical puddling was effected by coal dust fuel which was profitably utilzed and made remunerative. It was more than six years since Mr. Crampton first gave effect to his ideas; and up to the present time the results show the furnace to be simply perfect, the mode of constructing the water casing being one of its chief features, and the chamber being lined with oxide of iron. The best proof of the practical value of the Crampton furnace was afforded by the fact that Mr. Briggs was now putting up twelve of them at his works, where he had made arrangements to take the iron direct from blast furnaces to the heated reservoir from which it was to be carried to the revolver. Messrs. Fox, Head & Co., who were erecting four Crampton furnaces, had arranged to melt the iron in the cupola. In fact it appeared to be generally admitted that with several furnaces at work the iron should be melted in a separate furnace or cupola. The general results of Mr. Crampton's invention clearly demonstrate that in the first place slack or small coal could be utilized without the production of smoke, and that coal dust and air could be fed automatically—a matter which had sorely tried many who had previously endeavored to effect that object. In the next place it was proved that heat of great intensity could be produced with regularity and economy.

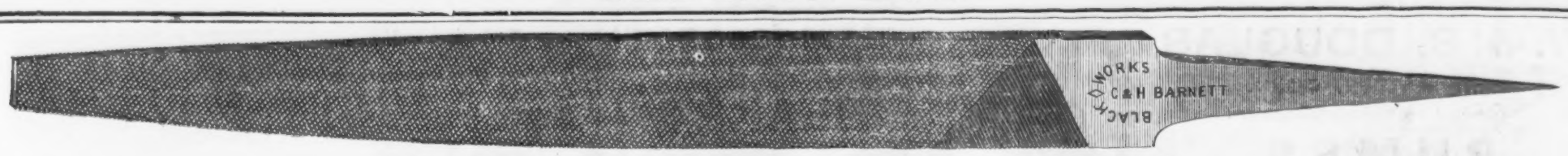
In conclusion, it was stated that the question of mechanical puddling, although not a very old one, had made rapid progress since it was first mooted. It could hardly yet be said to have received a satisfactory solution in a commercial sense in this country, however, if such a solution involved the condition that one or more of the systems was capable of a general application as an ordinary puddling furnace was. This must be the case with some, and the writer believed it was; but it had not yet been proved, for want of time. Despite the promising results of the Danks' furnace at some works in America, the proof of its general applicability had not yet been established in that country, neither had it been placed beyond a doubt in England, although it was believed there was still some hope of it here, and every endeavor was being made to render it successful both at Messrs. Heath's and the Erimus Works. From the latter establishment he was informed that great things were expected, although he had failed to learn what these great things might be. In the interests of the iron and steel industries, and no less in the interests of the inventor, he hoped it might be so. From what he had seen of the mechanical details of the Danks' furnace, however, he was satisfied that unless a radical change in the disposition of the parts took place, success could not attend its continuous working in this country. The conclusion, therefore, was that, although mechanical puddling had been well proved to be a practical success, it had nowhere yet established its claim to be considered a thoroughly commercial process. They appeared, however, to be on the eve of seeing this claim firmly established. In the meantime, there were appliances which, to some extent, aided the puddler in his heavier duties, and so partially relieved him from the severer toil inseparable from hand-puddling. Unquestionably, one of the greatest benefactors of his time, and the worthy successor of Cort, would be he who succeeded in rendering mechanical puddling a practical and commercial success.

Tool for Riveting Boiler Tubes.

La Metallurgie publishes a description of a tube riveting tool invented by M. Jouffret, engineer of the Doubes and South Eastern railway of France, and for which a medal was awarded by the Society of Industrial Sciences of Lyons. M. Jouffret, like many other engineers, recognized the difficulties and imperfections of the usual methods of riveting boiler tubes, and especially the fact that the effect of the hammer or other tool was often to shake a joint which had already been made and supposed perfect.

The apparatus in question consists of three steel runners or wheels, the peripheries of which are turned concave of the form desired to be given to the edge of the tube; these wheels are attached to a strong stock, of which the parts are so arranged that the runners can be set to any sized tube by the action of a screw and nut. The tube is placed in position in the plate, with its end projecting from 7 to 8 millimetres, more or less, according to the circumstances of the case. If a ferrule is to be inserted in the end of the tube, this is also fixed in its place; if not, a mandril supplies its place during the action of the tool. Thus the runners are equidistant, and tangentile to the ring or mandril. All the parts being in position the tool is caused to revolve around a central arbor, and the runners pressing heavily on the protruded end of the tube, rivet it completely and regularly all round, while neither the plate nor the tube being submitted to any shock, there is no distortion, and no disturbance of the riveting when once effected.

The inventor says that the work is done more rapidly by the new tool than by the old method; that an end is riveted by it in five minutes by the former, while the old method occupies from seven to eight minutes. Unfortunately, the tool is not applicable to the riveting of the tubes in the angles of locomotive boilers, but it is observed that these are subjected to the least wear. It is available for the central mass of tubes, and for the lower range, which are acted on directly by the fire, and which consequently should be riveted with the greatest possible care, especially in boilers, such as those of locomotives, in which the tubes act, to a certain extent, as ties between the tube plates and the smoke box. The tool is said not to be very expensive.



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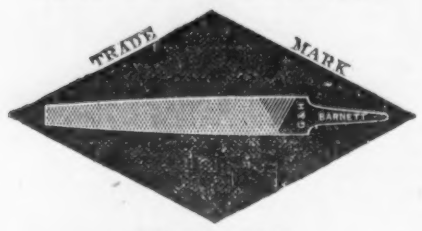

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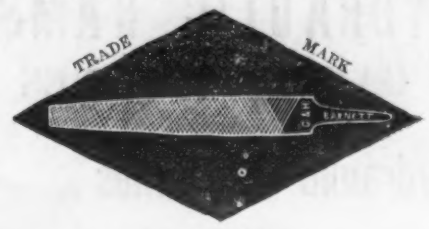

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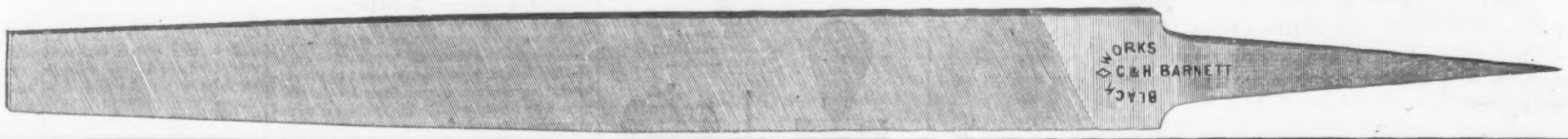

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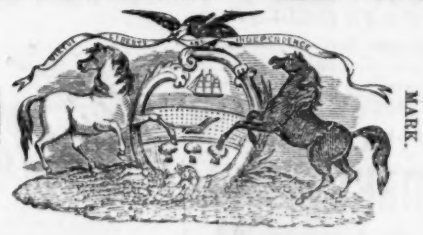
TRADE  MARK.

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Nos. 1732, 1734 & 1736 North Fourth St., Philadelphia, Pa.

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Middleboro' Shovel Co.,

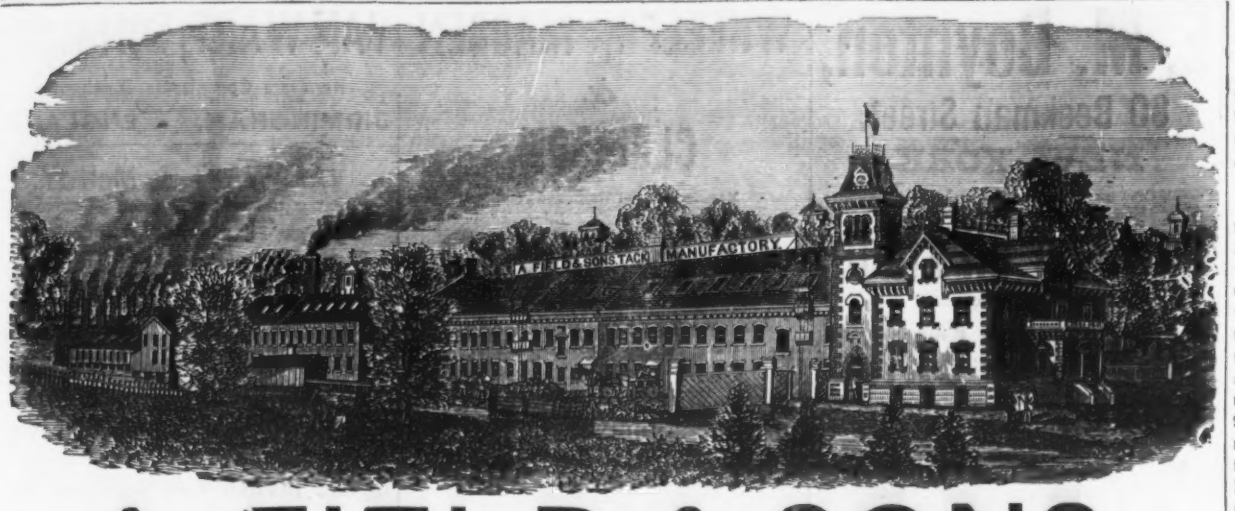
MANUFACTURERS OF

SHOVELS, SCOOPS & SPADES.

Office and Salesroom,

63 OLIVER STREET,

Works Middleboro, Mass. **BOSTON.**



A. FIELD & SONS,

TAUNTON, MASS., Manufacturers of

Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS. for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and teel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Paten Brads, Finishing Nails
Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Paten Copper Plated Tacks and Nails
Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks.
Glaziers' Points, etc., etc.

OFFICES AND FACTORIES AT TAUNTON, MASS.

WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for the accommodation of the New York Wholesale and Jobbing Trade.

☞ Any variations from the regular size or shape of the above named goods made from samples, to order. ☜

Hopkins & Dickinson Manufacturing Co.,

FINE METAL WORKERS,

69 DUANE STREET,

Works, DARLINGTON, New Jersey. **NEW YORK.**

HAND MADE LOCKS

AND REAL BRONZE HARDWARE.

New and Artistic Designs for Private Residences Banks, Churches and Public Buildings.

THE FINEST QUALITY OF BRONZE METAL IS USED IN ALL GOODS OF OUR MANUFACTURE

We are the Sole Manufacturers of the Patent "Secure Self Bolting Sash Lock," represented in above cut, endorsed by all the leading Architects and Builders. It draws the sashes together, prevents rattling or warping, is easily applied, and cannot be opened from the outside, and is therefore positively Burglar Proof.

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Reading Hardware Co.	Barnes & Deitz.	Underhill Edge Tool Co.
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Manufacturers of

LOWMAN'S PATENT CAST STEEL

SHOVELS, SPADES & SCOOPS

Of all Descriptions,

Without straps or rivets, of the best English and American Cast Steel. Every Shovel warranted. Printed lists of prices and discounts to be had on application at the office.

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OTIS PASSENGER —AND— FREIGHT ELEVATORS

For HOTELS, OFFICE BUILDINGS, STORES, WAREHOUSES, FACTORIES, MINES, BLAST FURNACES, &c.

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NEW YORK

Nickel Plating Co.

Works, 133 & 135 W. 25th Street,

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Philadelphia Nickel Plating Works.

John Hartman,

No. 1049 Ridge Avenue, Philadelphia.

ELECTRO-NICKEL PLATING

On all Metallic Articles finished in the best manner.

Office, 615 Jayne Street.

BUSINESS ITEMS.

NEW YORK.

At Ilion there is being built, for the Remington Armory, an immense chimney, which is to be 22 feet square at the base, 132 feet high, and to have a 5 foot square flue running the whole extent. The cost will be $4000.

NEW JERSEY.

Our readers will be glad to learn that the rumors in circulation last week regarding the failure of the Grant Locomotive Works were without substantial foundation in fact. Mr. Grant has made a statement of the facts in which he said that he had entered into a contract with the Russian Government involving nearly $2,000,000, to furnish locomotives within a certain time, with heavy penalties in case of non-fulfillment. He had been employing about 900 men on this work, but found that he would not be able to complete it within the time limited by the contract. He had applied to the Russian government for an extension, but the answer returned was evasive and unsatisfactory. The penalties if enforced would amount to about $200,000, and he did not feel justified in going on with the work under the contract with so great a risk hanging over him. He had, therefore, been obliged at the last moment to order his foremen to discharge the workmen until further notice. He stated that he was not otherwise embarrassed, and proposed to start for St. Petersburg on Saturday, and endeavor to make a compromise with the Russian authorities and then proceed with the work. If successful, he would telegraph to set the men to work again. Mr. Grant was very sanguine as to his ability to arrange with the Russian government for an extension of time, but said that in any event he had ample means to protect his creditors to the last dollar. He further stated that his workmen had been paid in full, and that he had taken this contract in order to provide work for them, as otherwise he would have been obliged to reduce the number last fall. In common with the other industries of the country, the locomotive works had suffered from the general depression, but he had not failed nor suspended.

PENNSYLVANIA.

A new rolling mill is to be built at Saltsburg, Indiana county, by Eastern capitalists.

It is said that Spang, Chalfant & Co.'s new mill, at Etna, will not start up this fall, unless business improves. The mill contains five puddling and one heating furnace. The puddling furnaces have a capacity of four tons each, single turn, and the heating furnace 40 tons per 24 hours. There is already in place a three-high muck train and a pipe train, both 18 inch, and the plate train will be put down in the spring.

A new hot blast is being added to the furnace of the Messrs. Wister. The probability is that the furnace will be kept in operation all winter, a contract having been made with the Pennsylvania Steel Company to furnish the Baldwin Works with 2000 tons of pig iron.

The Chesapeake Nail Works are in full operation, but the low price of nails affords very little, if any, margin for profits. McCormick's furnaces and rolling mill are also in operation.

Pittsburgh has a newly organized company, with a capital of $300,000, called the Harvest Queen Reaper and Binder Company. It will manufacture the Chapman reaper and self-binder.

MASSACHUSETTS.

Smith & Wesson, of Springfield, have just contracted to make nearly 20,000 more Russian pistols, assuring work in their shop for some time to come. The 1000 pistols lately manufactured for the Turks have been shipped from the factory. These pistols are similar to those manufactured for the Russians, except that a "rim fire" takes the place of the common "center fire."

A. G. Coes & Co., of Worcester, manufacture Coes' well known screw wrenches at the rate of from 12,000 to 15,000 a month. The business has been carried on since 1839. At present 50 hands are employed. The firm occupy two buildings, one 70x30 feet, and the other 45x35 feet, each two stories high, with L's, &c. The machinery is driven by a Swain turbine water wheel of 4 feet in diameter, the water having a fall of 14 feet. The firm also have an engine of 50 horse-power, built by Jerome Wheelock, and a Babcock & Wilcox boiler of 60 horse power.

Messrs. E. T. Tougas & Co., of Milford, have recently erected a new shop for the manufacture of boot and shoe, paper collar and envelope dies. Among their machinery is a four ton trip hammer.

The Wood & Light Machine Company, of Worcester, was organized as a stock company two years ago, with a capital of $200,000, but the business was established as long ago as 1846. They manufacture all kinds of iron working machinery, making specialties of lathes, planers, shapers and drills. They are having a good trade abroad, especially from Germany and Australia. They are just now doing a good deal of shafting work for Fall River, employing 20 hands in this department of their works. Four years ago they built their new shop, which is of brick, 350 by 60 feet, two stories and a basement, with an L 180 by 60 feet. When running full time, the company employ from 175 to 200 hands. They have a Harris-Corliss engine of 60 and a horse-power,

The melting house, of the Blair Iron and Steel Company, Pittsburgh, was destroyed by fire on Wednesday night of last week. The flames spread so rapidly that the structure was beyond control before the fire department could make an effort to save it. The works named stand on the river bank, at Glenwood, and are quite extensive. The building destroyed was an iron-clad and stood next to the river. The works had not been in operation since Saturday, and although it is not known how the fire originated, it is believed to have been caused by the gas from the furnace communicating with the roof. The furnace, as well as the crane and other machinery, suffered with the burning of the building, but not seriously. The losses were covered by insurance.

Stewart & Allen boiler of the same capacity. The company have spent $50,000 in special machinery for making shafting and pulley lathes.

The Fitchburg Machine Company are employing 100 men, or twice as many as on the 1st of September. They have just shipped to Canada an iron planer 20 feet long, 72 inches wide, and weighing 25 tons.

The Lowell Boiler Works and Steam Press Plate Works have been sold to Charles Cowley. The new proprietor will build upon the premises a three story brick factory, 150 by 75 feet, to be run by steam-power. All departments of the business are to be enlarged and several new features added. The new building will also have rooms and power to let for the use of other manufacturing enterprises.

NEW HAMPSHIRE.

The Sibley Scythe Company, of Northville, Newport, have doubled the capacity of their works and made many improvements. The complete establishment is now in full operation.

RHODE ISLAND.

The Star Tool Company, of Providence, are quite full of work, and are making fifty of Littlefield's new patent pipe thread cutting machines.

OHIO.

George Turner & Son, proprietors of the spike works at Youngstown, employ fifteen hands and produce annually $75,000 worth of their manufactures. Their works have a capacity of about ten tons of railroad and boat spikes per day. They also manufacture wrought iron fences. Their establishment contains four spike and two fence machines.

The King Iron Bridge Company, Cleveland, have 175 men in the shops, beside the outside force. They have built this year 134 bridges.

Belfont Furnace blew out last Tuesday night —will not blow in for some time.

A new peat press, patented last March, is being completed at the Cuyahoga Steam Furnace Company's Works, which will produce thirty tons of compressed peat per day. When completed, it will be put in operation at Marquette, Mich. For some time peat has been used in the raw state in connection with charcoal, in the iron manufacturing regions of Michigan, with great success, and it is thought that if peat can be furnished in a sufficiently solid state to keep up the ore, that a good quality of iron can be produced, fully equal to that made with charcoal, with peat alone. This machine presses the peat in a dry state, without tempering, and it is thought sufficiently solid for smelting.

ILLINOIS.

Under an arrangement with the creditors, the Joliet Iron and Steel Works are again in operation. The entire works were put upon the double turn October 26th, the company having received orders that will justify. Mr. H. E. Bigelow, the secretary of the company, has just completed the issue of certificates of stock to the Joliet creditors. During the stoppage several important improvements have been made. In the steel mill the gas furnaces have been put in repair, and the blooming and rail trains and engines been thoroughly overhauled. The company have also built a 40 ton fly-wheel for the blooming train, to replace the one which broke last December.

MISSOURI.

The St. Louis Bolt & Iron Co. have just taken an order for 150 tons of street rails for La Salle, Illinois. Six of the most important competitors of St. Louis were represented, including Chicago, Pittsburgh, Cincinnati and other points. The advantages of this city are gradually becoming known, and a great change has taken place since the establishment of this enterprising mill. Mr. O. W. Meysenburg leaves for Texas the latter part of the week, to extend the iron trade of St. Louis in that direction.—*St. Louis Railway Register.*

We learn that Andrew Wight, of St. Louis, manufacturer of street cars, busses, wagons, &c., recently received an order from Galveston, Texas, for $10,000 worth of street cars.

VIRGINIA.

The machine department of the Agricultural Works of H. M. Smith & Co., at Richmond, was burned October 26. Loss, $30,000

Fire at the Chattanooga Blast Furnace.—The Chattanooga *Commercial*, of the 27th ult., says: Yesterday morning at 7½ o'clock an accident occurred at the blast furnace which came near causing the destruction of a large amount of property. The furnace had a charge of eighty tons of iron, and was to have been drawn at eight o'clock, but about twenty-eight minutes before the time for casting, the molten iron burst through under the east side of the furnace wall, and ran down under the elevator, instantly setting fire to the elevator and stock house. Mr. David, secretary of the company, happened to be present, and with remarkable presence of mind turned steam on the powerful steam pump, uncoiled the hose, already attached, and soon had three streams of water playing on the fire. In a few minutes the fire was under control, but not until considerable damage had been done to the elevator, wire rope and elevator cage. The loss by fire is fully covered by insurance.

In 1861 England owned 5,895,369 tons of mercantile shipping, and the United States 5,482,227 tons. In 1872 the aggregate of British tonnage was 7,213,829, against 4,381,957 belonging to the United States. It is shown by the figures that the greatest and most rapid increase was effected during and after the civil war, nearly the whole carrying trade of the United States falling into the hands of England. Between 1861 and 1865 the tonnage of Great Britain rose from 5,895,369 to 7,322,604, the highest point ever reached, an annual increase at the rate of 355,000 tons per annum. During this period the registered tonnage of the United States fell off from 2,642,628 to 1,602,583, or at the rate of 1250,000 tons per annum. The tonnage of England increased from 14,505,064 in 1850, to 42,561,035 in 1872, or roughly speaking, by 200 per cent.

GEORGE GUEUTAL & SON,

39 West 4th St., New York.

IMPORTER OF

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c.

Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,

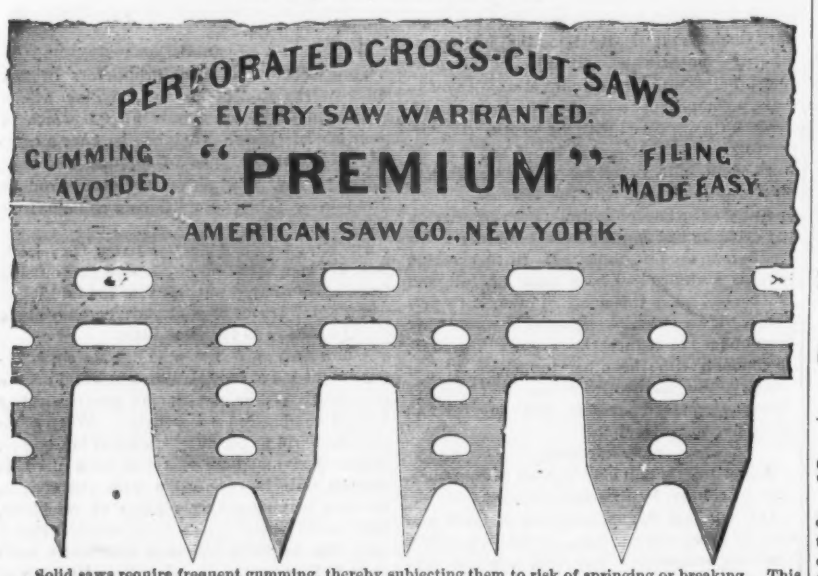
MANUFACTURER OF

SAWS OF ALL KINDS.

FACTORY, WILLIAMSBURGH, N. Y.

AMERICAN SAW CO.,

TRENTON, NEW JERSEY

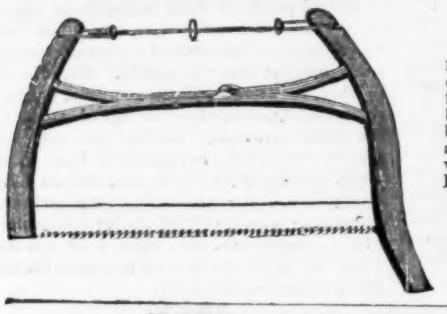


Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This is especially the case with cross cuts having *Patent Teeth*. In the perforated saws **all gumming is avoided** and the teeth are easily kept long and in *proper shape*, saving *files, labor, expense* and *vexation* As is well known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

Hankins' Elliptic Forked Saw Frame.

Patented June 28th, 1870.



The annexed engraving represents HANKINS' ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,

VULCAN SAW WORKS,

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THE SILVER STEEL

DIAMOND CROSS-CUT SAW.

$1.50 Per Foot.

PATENT HANDLES AND GAUGE INCLUDED.

Patent Secured

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of **SPEED AND EASE**, is manufactured by **E. C. ATKINS & CO., Indianapolis, Ind.,** who are the

SOLE MANUFACTURERS FOR THE UNITED STATES.

So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

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Saw Manufacturers and Repairers, Indianapolis, Ind.

R. E. NEIL, President. H. A. LANMAN, Treas. & Manager. F. G. WADDEL, Secretary.

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COLUMBUS, OHIO,

Manufacturers of BEST NORWAY IRON

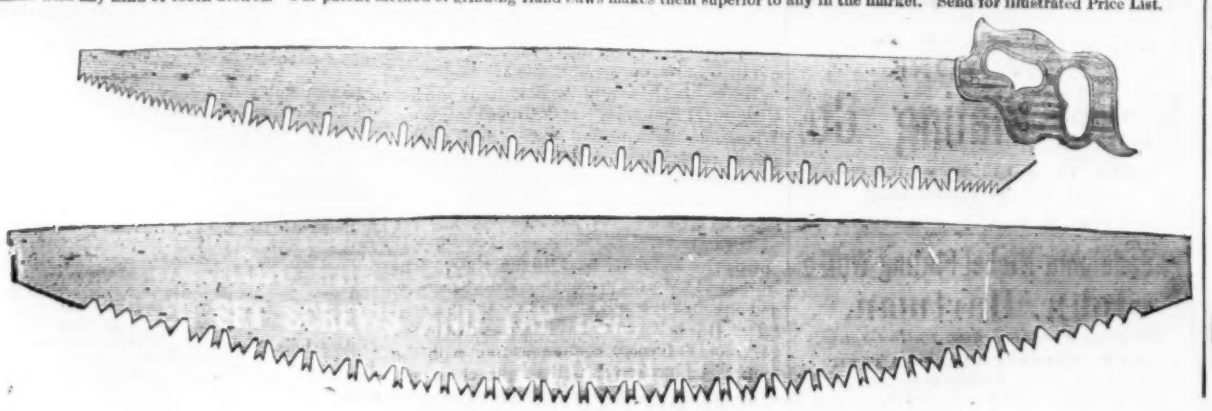
Carriage, Steeple, Cone, Shackle, Elliptic, Shaft and Tire

All the different styles used by the manufacturers of the finest Carriages. Every Bolt warranted true to size and fit. Illustrated Price Lists mailed on application. Our facilities are unsurpassed for the manufacture of **Machine Bolts and Coach Screws.** Correspondence from Car, Bridge and Machinery Builders solicited.

J. FLINT & CO.,

Manufacturers of all kinds of SAWS and PLASTERING TROWELS, Rochester, N. Y.

A large Stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market. Send for illustrated Price List.



E. M. Boynton,

80 Beekman Street,

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Manufacturer of

Saws of all kinds.

Also Sole Manufacturer of

LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.

Note extra steel and durability over the old V, outlined on M tooth.

I am willing and extremely anxious, on proper notice, to accept a Challenge from H. Disston & Sons, or any responsible Saw Manufacturer, and am ready to back my words with appropriate deeds and $500 expense, if beaten.

N. B.---With Hand, Billet or Cross Cut Saw, $500 on each.

E. M. BOYNTON.

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Commission Merchants and General Agents, execute orders for British manufactures on the lowest terms, and collect and forward goods for a very moderate payment. Agents for the sale of North Staffordshire Iron of a standard quality.

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"Patented" Furnace Charging Scale.

Double Beam R. R. Track Scale, Compound Parallel Crane Beams, &c. Patented First Power Lever Wagon Scales. Testing Machines any capacity.

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New York City.

Salesroom,

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Patent Improved

BAND SAW MACHINES.

For Bevel and Square Scroll Work and Re-sawing. Manufacture six different sizes. Prices, $165, $210, $250, $360, $425, and $1000. Also manufacture CARVING, SHAPING, FLUTING, ADJUSTABLE DOUBLE SPINDLE BORING, CARVED and SERPENTINE MOLDING MACHINES. Also, GENERAL and COUNTER-BALANCED OVAL TURNING LATHES for WOOD and BRASS TURNING, METAL SPINNING, etc.

CIRCULAR SAW BENCHES, SHAFTING PULLEYS, and HANGERS.

A large assortment of the best FRENCH BAND SAW BLADES, at greatly reduced prices. And a Machine that will set an ordinary Band Saw PERFECT in two and a half to three minutes.

MORE LIGHT, LESS OIL AND NO CHIMNEYS.

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Equal to Gas, No Smoke, No Smell, Guaranteed cannot Explode. Send for Circular. Liberal discount to Trade.

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Cast Steel Files

of the well known brand of

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BRUNDAGE FORGED HORSE NAILS,

Manufactured from

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I make a specialty of the LARGEST SIZES of **Circular Saws,** and call particular attention of lumber manufacturers to the following points of excellence:

Evenness of Temper.—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures perfect uniformity.

Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed BALANCES PERFECTLY, which is proof positive of the right accomplishment of the work.

Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time RUN TRUE. This department is under the personal supervision of myself, who has devoted over *twenty years* to the art of saw making.

I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

JAMES OHLEN.

The Sugar Maker's Friend.

PRICE, $4.50 per hundred.

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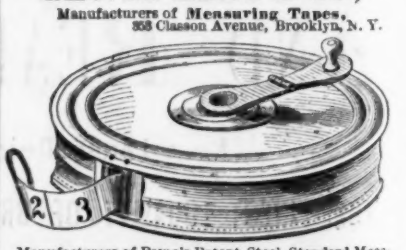

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AND

Angular Extension BORER.

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SOLE MANUFACTURER OF

ANGULAR EXTENSION BORER.

Salesroom, 82 Chambers St., N. Y.

This tool can be used in any brace, at any angle, and also for straight work. Is the best and most convenient tool of its kind ever offered to the public. Eight thousand sold the first year.

Also Manufactures the Straight Extension

Backus's Pat. Improved Bit Brace.

The socket is arranged so that the strain does not come on the jaws, but on the square hole which fits the shank of the bit. The jaws attached to the sleeve hold the bit firmly in the square, and center it truly. The sweep is of wrought iron. The general finish of the stock is good. Its appearance is neat. Mechanics who have used it unanimously pronounce it superior to all others; and we offer it to the trade as the strongest, most simple, and quickest operating brace in the market. We manufacture five sizes. The number of inches of sweep corresponds with the commercial number of the list.

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IN GREAT VARIETY.

Extra Hard Rubber Handle Table Cutlery of our own Manufacture.

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And the "**Patent Ivory**" or Celluloid Knife. These Handles never **get loose**, are not affected by **hot water**, and are the most **durable knives** known. Always call for the Trade Mark "**MERIDEN CUTLERY COMPANY**" on the blade. Warranted and sold by all dealers in Cutlery, and by the MERIDEN CUTLERY CO., 49 Chambers Street, New York.

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which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other knife. Orders filled from the factory or by

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Handsomest, Cheapest, most Durable Cutlery in use.

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Full Concaved Razors,
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AMERICAN

PEN AND POCKET KNIVES,

MANUFACTURED BY *PEPPERELL,*

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My Blades are forged from the best Cast Steel, and warranted. To me was awarded the GOLD MEDAL of the Connecticut State Agricultural Society; also a Medal and Diploma from the Mass. Mechanics' Ass'n Sept., 1869

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RAZORS,
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Celebrated I-XL Cutlery, Razors, &c

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Wholesale Manufacturer of

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Manufacturers of

SHOVELS,

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Send for Circular and Price List.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Nov. 2, 1874.

The long continued sluggishness in the productive industries still continues, and is beginning to absorb the attention of thinking men as to what the ultimate result will be. It is generally conceded that all the schemes for increasing the value of money which sprung from any other source than increased production, industry and labor, are only illusory, and that the shrinkage in values of products cannot go on much longer without involving all interests in common ruin. The real lever which can move the whole inert mass is timid and shrinking, and until some radical change in this condition occurs we are steadily progressing from bad to worse. A peculiar feature of the situation is that we are seeking so little capital from abroad. According to reliable authority the amount of foreign loans negotiated in September last, for American enterprises in the London market, was but $3,500,000; while for the month of October not one American investment is reported in that market, which usually calls up from five to ten millions per month for American securities. Whatever may be the true theory in regard to foreign loans, it is clearly evident that this argues an unhealthy condition of affairs in our country, and that the whole world is to a greater or less extent affected by the same lethargy. Locally, many are of opinion that the especial dullness of the moment is due to the approaching elections, and that these once decided a reaction in business will commence, and before spring restore us to our wonted vigor.

The week just past has been one of unwonted activity in this city outside of business circles. Being as was supposed the closing week of the Franklin Institute Exhibition, that display was crowded with visitors beyond expectation, showing the great popularity it has gained, until at the close, in response to the numerous petitions for extension of time, and the Pennsylvania Railroad Company having generously extended the gratuitous use of the building for a fortnight, it was determined by the managers to continue the Exhibition until November 12th instant.

The articles of interest in the metal line are very numerous, and there is scarcely an exhibitor who has not felt direct benefit from his display by the orders received at the exhibition. The multitude will continue to visit and examine the articles on exhibition, each gaining some information of benefit to himself, and ultimately of benefit to the city, until by the Centennial year these same visitors will, many of them in turn, become exhibitors, incited thereto from their visits to the Franklin Institute Exhibition. With the close will come the boiler and engine tests, which promise to be very thorough, and to give us a great deal of valuable information in regard to the subject of steam machinery construction. Judge Kelley's address on the Reciprocity Treaty was delivered on Wednesday evening, at the Academy of Music, to a large audience, in which our manufacturers were generally well represented. The address has done just what was required of it, viz., to arouse the manufacturers of all branches to a sense of the danger hanging over them, if the trickery which planned this outrage in legislation should succeed. Judge Kelley in this address purposely avoided all the commonly used weapons of rhetoric and commonplace argument, and dealt only with the practical effect of the treaty as shown by actual figures. That he aroused all interests in opposition to it is evident from the following correspondence:

PHILADELPHIA, Oct. 26, 1874.

Gentlemen:—You are no doubt aware that the advocates of free trade (mostly agents of foreign establishments in New York), are endeavoring to have ratified a Treaty of Reciprocity with Canada, one article of which gives Canadian shipbuilders and owners the right to register Canadian built vessels in custom houses of the United States, and of course to compete with American ship owners in our coasting trade. Will not this be a crushing blow to a most important branch of business that has been languishing so long, and put a stop to the increase of our fleet of splendid three-masted schooners, so many of which are now being built in various parts of Delaware, New Jersey, Kensington, Cooper's Point and other places?

Will it not also be most damaging to our coasting trade, to allow a lot of low-priced, coal-tarred hulks to register and compete with our fleet of splendid coasters, both sailing and steam vessels? Will you be good enough to give me your views on a matter of so much importance to our shipbuilders and ship owners, and all engaged in the shipping business, and oblige. Very respectfully yours,

MORRIS G. CONDON, 245 Arch street.

To Messrs. Bierly, Hillman & Streaker, Shipbuilders, Kensington.

REPLY.

KENSINGTON, Philadelphia, Oct. 26, 1874.

Dear Sir:—Your letter of this date is at hand. In reply to your inquiry as to what effect it will have on the shipbuilding and shipping interest of this country to allow Canadian or other foreign built vessels to register in our custom houses and compete in our coasting trade, we will state that no nation in the world maintains such a class of splendid vessels, for either foreign or coastwise trade, as the United States, and as you suggest, the ship building and shipping interests of the country have been languishing for a long while. To allow Canadian or any foreign built vessels to register and compete in our coasting trade will be a death-blow to our whole shipbuilding and shipping interests. By far the greatest portion of our foreign trade is now carried in foreign built vessels. This is proof of the languishing or unhealthy state of our shipping interests, and shows the folly of allowing foreign built vessels to compete with our coastwise shipping.

BIERLY, HILLMAN & STREAKER.

To Morris G. Condon, 245 Arch street.

While speaking of shipbuilding we note the launch of a new iron screw from Cramp's yard for the Pennsylvania Railroad Company. This steamer is 145 feet long by 26 feet beam, and 10 feet hold, and is intended for service on the Raritan River for the Delaware and Raritan Canal. At the same yard is a new iron ferry boat, for the Reading Company, to be used in transporting coal from Windmill Island, opposite the city. The English steamer Canima, of the New York and Bermuda Line, is also being altered here, and the double turreted monitor, Terror, is undergoing repairs, while the Pottsville, the last of the Reading Company's colliers, is nearly ready for launching.

The meeting of the American Institute of Mining Engineers, at Hazleton, on the 28th ult., was extremely interesting, and among the invited guests present were Lowthian Bell and Thomas Whitwell, of England. The full proceedings will be looked for with interest. During the week a special train with a number of railroad officials was run from this point to Jersey City, 96 miles, in one hour and fifty minutes, being the best time ever made on the road. The quickest time on the run was made between Philadelphia and Trenton, in which the distance of thirty miles was run in *thirty-nine* minutes, including several "slow ups" for railroad crossings, yards, &c. This would seem to indicate that there is no difficulty in running two hour trains between the points named, and if so it is a want much felt by the business public, and one which must be attended to by the Centennial year.

I am promised the particulars of two new and interesting processes for your readers, both directly connected with the iron trade. The one is a practical and cheap application of the burning of petroleum in all branches of iron making in direct competition with coal as fuel. The other is a new adaptation of a process of rolling tubular iron to *nut making*, and by which it is claimed that with an ordinary rolling mill of, say, seven puddling and four heating furnaces, with two trains of rolls, *twelve tons* of finished nuts, suitable for any bolts from half inch to five inches diameter, can be produced in the double turn per day. The quality of the nuts thus made is stated to be equal to any, either hot or cold pressed, and the price very materially lower than as at present produced.

These are both subjects of prime importance to the trade, and it seems as if the hard times were producing their legitimate effect in bringing out cheap ores, new processes and low priced fuels, by which each successive step in the industry shall be so economized as to enable the product to meet the exigencies of depressed prices.

Wages in the Iron Trades.

The Pittsburgh *Commercial* says: The question of wages in our rolling mills, at all times an important subject, is at present assuming a more than usual magnitude, in view of movements that have taken place at other iron producing localities. It is hardly necessary to say, in introducing this intricate and delicate subject, that the true interests of the laboring man are the proper ones to be considered, and that public policy and democratic sentiment alike prompt the desire that the workingmen in this most important branch of industry should receive the fullest rate of wages that can be allowed, without jeopardizing the security and permanence of our manufacturing interests. The converse of the proposition is no less true—that it is not for the interest of the boilers and laborers in our rolling mills to insist on a rate of wages which is likely to terminate in cutting off Pittsburgh's iron trade, closing up the mills, and throwing themselves out of employment. With these preliminary remarks, we desire to submit some facts which have an important bearing on this subject, and to ask a candid consideration of them from the laboring classes in the iron mills of Pittsburgh.

During this fall, a very important movement has been going on in the Eastern iron mills, which amounts to a reduction of from twenty to twenty-five per cent. in the prices paid for labor. An examination into the facts shows that at Scranton the price paid for puddling is between $3·50 and $3·75 per ton. At Harrisburg the price is $4 for puddling, and $5 for boiling. At Troy, New York, the mill owners have fixed the price for boiling at $4·50, and for puddling at $3·75. The price of puddling in the Eastern rail mills ranges from $3·75 to $4 per ton, and for boiling, an increase of seventy-five cents to one dollar is generally paid. The figures thus given present, as we understand it, a fair view of the average rate of wages paid to boilers and puddlers in the Eastern iron mills of this country. In respect to other labor, the Eastern iron manufacturers have made a reduction of twenty or twenty-five per cent. in wages, and they are now paying common day laborers from $1 to $1·25 per day.

A comparison of these prices with the wages now paid in Pittsburgh shows what an immense advantage is gained by the Eastern iron manufacturers. Our mills pay $6 per ton for boiling, and a moment's consideration will show that in this difference alone there is given an advantage to Eastern manufacturers of from one to two dollars, in some instances amounting to two dollars and a half per ton of manufactured iron.

The peril which is involved in such a disadvantage to our iron manufacturers is more clearly understood when we take into consideration our location in respect to the districts which we have heretofore supplied with iron. A very large proportion of the trade in the past has been to the East, and in the very localities where these works are located. It cannot be expected that, with an advantage averaging $1·85 per ton in favor of the Eastern manufacturers, Pittsburgh can, in these close times, sell any merchant iron to Eastern buyers.

But this is not the most important or the most serious aspect of the case. The rates of freight afforded to the Eastern mills during nine months of the year are as low as those which Pittsburgh gets, and with the difference in the first cost of manufacture shown to exist above, they would be able to sell iron in the very localities that are now regarded as the peculiar consuming districts of the Pittsburgh production. They stand on a nearly equal footing with Pittsburgh manufacturers on the question of freights, and, during the summer, the iron manufacturers of Troy can reach Chicago and other lake ports at as low a rate of freight as Pittsburgh in that respect. Hitherto the natural advantages of Pittsburgh have enabled her iron mills not only to control all the Western trade, but to sell a considerable amount of iron to the East. But under the close margins established since the panic, a difference of $1·85 per ton would be apt not only to cut off the Eastern trade, but to seriously imperil and diminish the supremacy of Pittsburgh in the Western iron business.

THE INTERESTS OF THE WORKINGMEN.

It is obviously the interest of the laboring classes to adopt such a course as will insure continued and active operations in all the Pittsburgh iron works, and to do so the question of a reduction of wages must be considered. If the Eastern iron trade of Pittsburgh is cut off, as it inevitably must be under present prices of wages, a considerable portion of our manufacturing establishments will be compelled to stand idle, and many hands will be thrown out of employment. But, more than this, if, with this advantage to support them, the Eastern manufacturers are allowed to obtain a foothold in the iron consuming districts of the West, there is great peril that most of the mills in Pittsburgh will be thrown out of employment, and that great suffering and distress will ensue to the working classes of our city during the coming winter.

We hope that the iron workers of Pittsburgh will give these facts a careful and unprejudiced consideration. The subject is a delicate one, and should be carefully handled. But if the laboring classes will take the matter into a dispassionate consideration, and will, as we hope they will, meet the mill owners and employers fairly upon any reasonable proposition that they may make, the question will be relieved of its intricate character. It should be borne in mind, too, that ever since the panic, the Pittsburgh iron manufacturers have kept their men steadily employed, running their mills at a time when there was no inducement offered to them, either in the prices offered or in the demand for iron, and in some cases at a dead loss of the capital employed. This they did, when manufacturers elsewhere closed their works, and the consequence has been that there has been less idleness and distress in Pittsburgh, since the beginning of the panic, than in any other manufacturing city in the country. We feel assured that in this plucky and public spirited action on the part of the Pittsburgh iron manufacturers, their employes will see a sufficient guarantee that they will be called upon to make no concessions that are not essential to preserving the activity of Pittsburgh industries, and that the latter class will show that they do not intend to be outdone by their employers in public spirit and determination to keep up Pittsburgh's supremacy in the iron industry.

GEORGE GUEUTAL & SON,

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Wood Screws, Steel in Sheets,

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Bed Screws, Pin Hinges, and Wire Nails a Specialty.

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MANUFACTURER OF

SAWS OF ALL KINDS.

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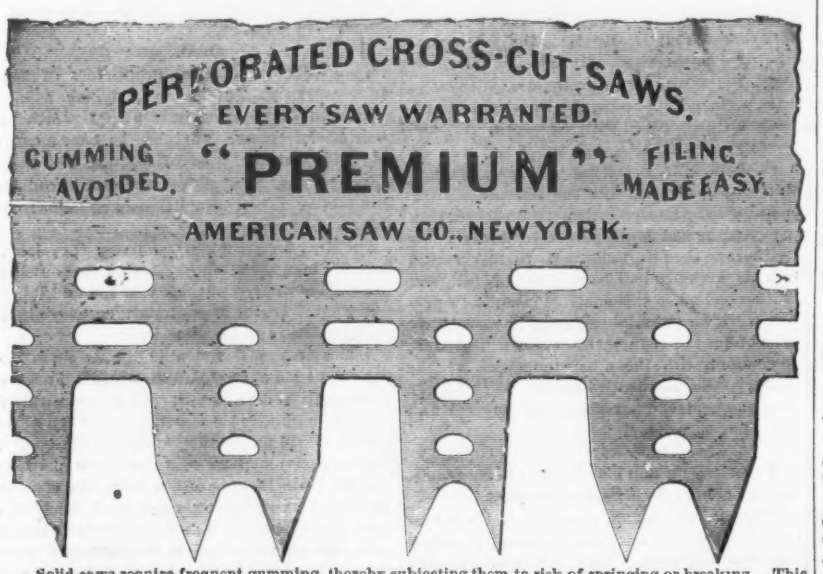
AMERICAN SAW CO.,

TRENTON, NEW JERSEY



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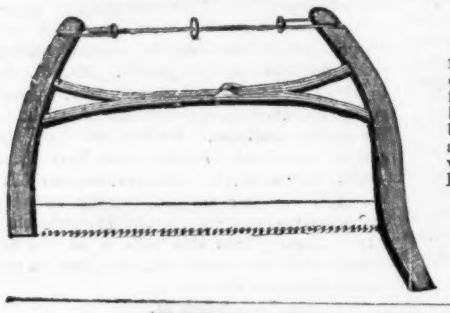
Hankins' Elliptic Forked Saw Frame.



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DIAMOND CROSS-CUT SAW.

$1.50 Per Foot.

PATENT HANDLES AND GAUGE INCLUDED.

Patent Secured

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So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled.

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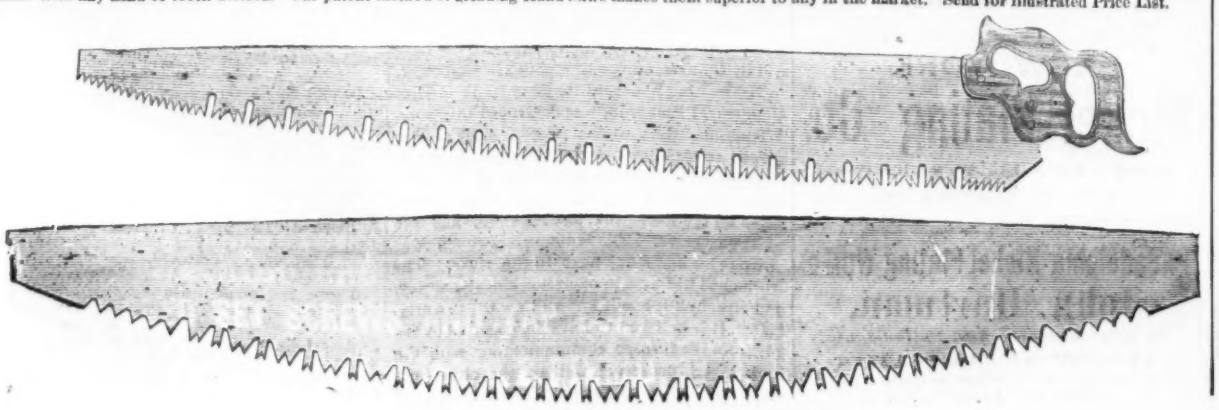

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A large assortment of the best FRENCH BAND SAW BLADES, at greatly reduced prices. And a Machine that will set an ordinary Band Saw PERFECT in two and a half to three minutes.

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I am sole proprietor and manufacturer of the celebrated **"Challenge" Cross-Cut Saw.** Price Lists of all kinds of saws sent on application.

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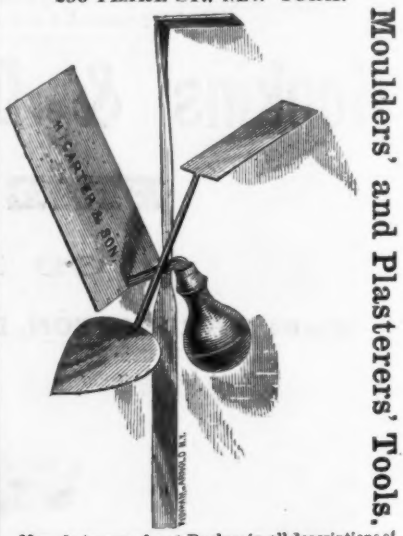

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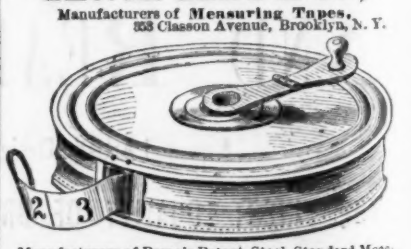

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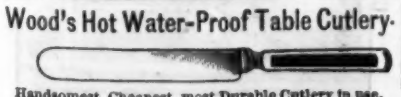

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Send for Circular and Price List.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Nov. 2, 1874.

The long continued sluggishness in the productive industries still continues, and is beginning to absorb the attention of thinking men as to what the ultimate result will be. It is generally conceded that all the schemes for increasing the value of money which sprung from any other source than increased production, industry and labor, are only illusory, and that the shrinkage in values of products cannot go on much longer without involving all interests in common ruin. The real lever which can move the whole inert mass is timid and shrinking, and until some radical change in this condition occurs we are steadily progressing from bad to worse. A peculiar feature of the situation is that we are seeking so little capital from abroad. According to reliable authority the amount of foreign loans negotiated in September last, for American enterprises in the London market, was but $3,500,000; while for the month of October not one American investment is reported in that market, which usually calls up from five to ten millions per month for American securities. Whatever may be the true theory in regard to foreign loans, it is clearly evident that this argues an unhealthy condition of affairs in our country, and that the whole world is to a greater or less extent affected by the same lethargy. Locally, many are of opinion that the especial dullness of the moment is due to the approaching elections, and that these once decided a reaction in business will commence, and before spring restore us to our wonted vigor.

The week just past has been one of unwonted activity in this city outside of business circles. Being as was supposed the closing week of the Franklin Institute Exhibition, that display was crowded with visitors beyond expectation, showing the great popularity it has gained, until at the close, in response to the numerous petitions for extension of time, and the Pennsylvania Railroad Company having generously extended the gratuitous use of the building for a fortnight, it was determined by the managers to continue the Exhibition until November 12th instant.

The articles of interest in the metal line are very numerous, and there is scarcely an exhibitor who has not felt direct benefit from his display by the orders received at the exhibition. The multitude will continue to visit and examine the articles on exhibition, each gaining some information of benefit to himself, and ultimately of benefit to the city, until by the Centennial year these same visitors will, many of them in turn, become exhibitors, incited thereto from their visits to the Franklin Institute Exhibition. With the close will come the boiler and engine tests, which promise to be very thorough, and to give us a great deal of valuable information in regard to the subject of steam machinery construction. Judge Kelley's address on the Reciprocity Treaty was delivered on Wednesday evening, at the Academy of Music, to a large audience, in which our manufacturers were generally well represented. The address has done just what was required of it, viz., to arouse the manufacturers of all branches to a sense of the danger hanging over them, if the trickery which planned this outrage in legislation should succeed. Judge Kelley in this address purposely avoided all the commonly used weapons of rhetoric and commonplace argument, and dealt only with the practical effect of the treaty as shown by actual figures. That he aroused all interests in opposition to it is evident from the following correspondence:

PHILADELPHIA, Oct. 26, 1874.

Gentlemen:—You are no doubt aware that the advocates of free trade (mostly agents of foreign establishments in New York), are endeavoring to have ratified a Treaty of Reciprocity with Canada, one article of which gives Canadian shipbuilders and owners the right to register Canadian built vessels in custom houses of the United States, and of course to compete with American ship owners in our coasting trade. Will not this be a crushing blow to a most important branch of business that has been languishing so long, and put a stop to the increase of our fleet of splendid three-masted schooners, so many of which are now being built in various parts of Delaware, New Jersey, Kensington, Cooper's Point and other places?

Will it not also be most damaging to our coasting trade, to allow a lot of low-priced, coal-tarred hulks to register and compete with our fleet of splendid coasters, both sailing and steam vessels? Will you be good enough to give me your views on a matter of so much importance to our shipbuilders and ship owners, and all engaged in the shipping business, and oblige. Very respectfully yours,

MORRIS G. CONDON, 245 Arch street.

To Messrs. Bierly, Hillman & Streaker, Shipbuilders, Kensington.

REPLY.

KENSINGTON, Philadelphia, Oct. 26, 1874.

Dear Sir:—Your letter of this date is at hand. In reply to your inquiry as to what effect it will have on the shipbuilding and shipping interest of this country to allow Canadian or other foreign built vessels to register in our custom houses and compete in our coasting trade, we will state that no nation in the world maintains such a class of splendid vessels, for either foreign or coastwise trade, as the United States, and as you suggest, the ship building and shipping interests of the country have been languishing for a long while. To allow Canadian or any foreign built vessels to register and compete in our coasting trade will be a death-blow to our whole shipbuilding and shipping interests. By far the greatest portion of our foreign trade is now carried in foreign built vessels. This is proof of the languishing or unhealthy state of our shipping interests, and shows the folly of allowing foreign built vessels to compete with our coastwise shipping.

BIERLY, HILLMAN & STREAKER.

To Morris G. Condon, 245 Arch street.

While speaking of shipbuilding we note the launch of a new iron screw from Cramp's yard for the Pennsylvania Railroad Company. This steamer is 145 feet long by 26 feet beam, and 10 feet hold, and is intended for service on the Raritan River for the Delaware and Raritan Canal. At the same yard is a new iron ferry boat, for the Reading Company, to be used in transporting coal from Windmill Island, opposite the city. The English steamer Canima, of the New York and Bermuda Line, is also being altered here, and the double turreted monitor, Terror, is undergoing repairs, while the Pottsville, the last of the Reading Company's colliers, is nearly ready for launching.

The meeting of the American Institute of Mining Engineers, at Hazleton, on the 28th ult., was extremely interesting, and among the invited guests present were Lowthian Bell and Thomas Whitwell, of England. The full proceedings will be looked for with interest. During the week a special train with a number of railroad officials was run from this point to Jersey City, 96 miles, in one hour and fifty minutes, being the best time ever made on the road. The quickest time on the run was made between Philadelphia and Trenton, in which the distance of thirty miles was run in *thirty-nine* minutes, including several "slow ups" for railroad crossings, yards, &c. This would seem to indicate that there is no difficulty in running two hour trains between the points named, and if so it is a want much felt by the business public, and one which must be attended to by the Centennial year.

I am promised the particulars of two new and interesting processes for your readers, both directly connected with the iron trade. The one is a practical and cheap application of the burning of petroleum in all branches of iron making in direct competition with coal as fuel. The other is a new adaptation of a process of rolling tubular iron to *nut making*, and by which it is claimed that with an ordinary rolling mill of, say, seven puddling and four heating furnaces, with two trains of rolls, *twelve tons* of finished nuts, suitable for any bolts from half inch to five inches diameter, can be produced in the double turn per day. The quality of the nuts thus made is stated to be equal to any, either hot or cold pressed, and the price very materially lower than as at present produced.

These are both subjects of prime importance to the trade, and it seems as if the hard times were producing their legitimate effect in bringing out cheap ores, new processes and low priced fuels, by which each successive step in the industry shall be so economized as to enable the product to meet the exigencies of depressed prices.

Wages in the Iron Trades.

The Pittsburgh *Commercial* says: The question of wages in our rolling mills, at all times an important subject, is at present assuming a more than usual magnitude, in view of movements that have taken place at other iron producing localities. It is hardly necessary to say, in introducing this intricate and delicate subject, that the true interests of the laboring man are the proper ones to be considered, and that public policy and democratic sentiment alike prompt the desire that the workingmen in this most important branch of industry should receive the fullest rate of wages that can be allowed, without jeopardizing the security and permanence of our manufacturing interests. The converse of the proposition is no less true—that it is not for the interest of the boilers and laborers in our rolling mills to insist on a rate of wages which is likely to terminate in cutting off Pittsburgh's iron trade, closing up the mills, and throwing themselves out of employment. With these preliminary remarks, we desire to submit some facts which have an important bearing on this subject, and to ask a candid consideration of them from the laboring classes in the iron mills of Pittsburgh.

During this fall, a very important movement has been going on in the Eastern iron mills, which amounts to a reduction of from twenty to twenty-five per cent. in the prices paid for labor. An examination into the facts shows that at Scranton the price paid for puddling is between $3·50 and $3·75 per ton. At Harrisburg the price is $4 for puddling, and $5 for boiling. At Troy, New York, the mill owners have fixed the price for boiling at $4·50, and for puddling at $3·75. The price of puddling in the Eastern rail mills ranges from $3·75 to $4 per ton, and for boiling, an increase of seventy-five cents to one dollar is generally paid. The figures thus given present, as we understand it, a fair view of the average rate of wages paid to boilers and puddlers in the Eastern iron mills of this country. In respect to other labor, the Eastern iron manufacturers have made a reduction of twenty or twenty-five per cent. in wages, and they are now paying common day laborers from $1 to $1·25 per day.

A comparison of these prices with the wages now paid in Pittsburgh shows what an immense advantage is gained by the Eastern iron manufacturers. Our mills pay $6 per ton for boiling, and a moment's consideration will show that in this difference alone there is given an advantage to Eastern manufacturers of from one to two dollars, in some instances amounting to two dollars and a half per ton of manufactured iron.

The peril which is involved in such a disadvantage to our iron manufacturers is more clearly understood when we take into consideration our location in respect to the districts which we have heretofore supplied with iron. A very large proportion of the trade in the past has been to the East, and in the very localities where these works are located. It cannot be expected that, with an advantage averaging $1·85 per ton in favor of the Eastern manufacturers, Pittsburgh can, in these close times, sell any merchant iron to Eastern buyers.

But this is not the most important or the most serious aspect of the case. The rates of freight afforded to the Eastern mills during nine months of the year are as low as those which Pittsburgh gets, and with the difference in the first cost of manufacture shown to exist above, they would be able to sell iron in the very localities that are now regarded as the peculiar consuming districts of the Pittsburgh production. They stand on a nearly equal footing with Pittsburgh manufacturers on the question of freights, and, during the summer, the iron manufacturers of Troy can reach Chicago and other lake ports at as low a rate of freight as Pittsburgh in that respect. Hitherto the natural advantages of Pittsburgh have enabled her iron mills not only to control all the Western trade, but to sell a considerable amount of iron to the East. But under the close margins established since the panic, a difference of $1·85 per ton would be apt not only to cut off the Eastern trade, but to seriously imperil and diminish the supremacy of Pittsburgh in the Western iron business.

THE INTERESTS OF THE WORKINGMEN.

It is obviously the interest of the laboring classes to adopt such a course as will insure continued and active operations in all the Pittsburgh iron works, and to do so the question of a reduction of wages must be considered. If the Eastern iron trade of Pittsburgh is cut off, as it inevitably must be under present prices of wages, a considerable portion of our manufacturing establishments will be compelled to stand idle, and many hands will be thrown out of employment. But, more than this, if, with this advantage to support them, the Eastern manufacturers are allowed to obtain a foothold in the iron consuming districts of the West, there is great peril that most of the mills in Pittsburgh will be thrown out of employment, and that great suffering and distress will ensue to the working classes of our city during the coming winter.

We hope that the iron workers of Pittsburgh will give these facts a careful and unprejudiced consideration. The subject is a delicate one, and should be carefully handled. But if the laboring classes will take the matter into a dispassionate consideration, and will, as we hope they will, meet the mill owners and employers fairly upon any reasonable proposition that they may make, the question will be relieved of its intricate character. It should be borne in mind, too, that ever since the panic, the Pittsburgh iron manufacturers have kept their men steadily employed, running their mills at a time when there was no inducement offered to them, either in the prices offered or in the demand for iron, and in some cases at a dead loss of the capital employed. This they did, when manufacturers elsewhere closed their works, and the consequence has been that there has been less idleness and distress in Pittsburgh, since the beginning of the panic, than in any other manufacturing city in the country. We feel assured that in this plucky and public spirited action on the part of the Pittsburgh iron manufacturers, their employes will see a sufficient guarantee that they will be called upon to make no concessions that are not essential to preserving the activity of Pittsburgh industries, and that the latter class will show that they do not intend to be outdone by their employers in public spirit and determination to keep up Pittsburgh's supremacy in the iron industry.

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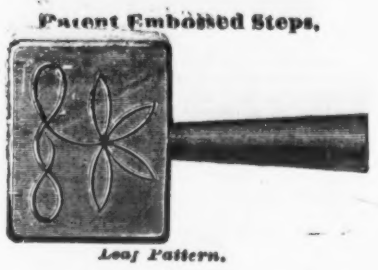
Established 1850.

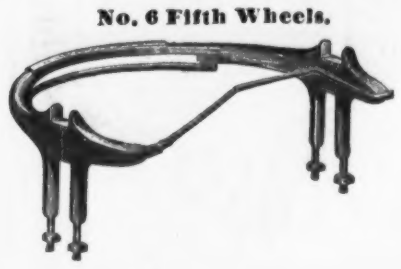
Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.

No. 6 Fifth Wheels.



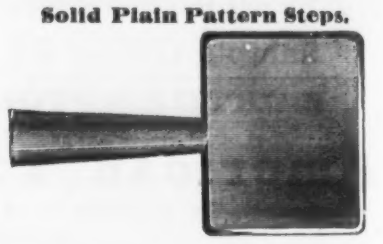
1871 Pattern Shaft Couplings.

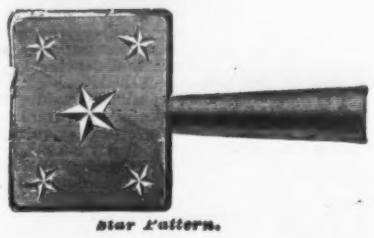
Patent Cross Bar Steps.

Upper View.

Lower View.

Solid Plain Pattern Steps.





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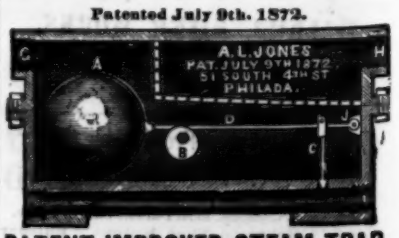

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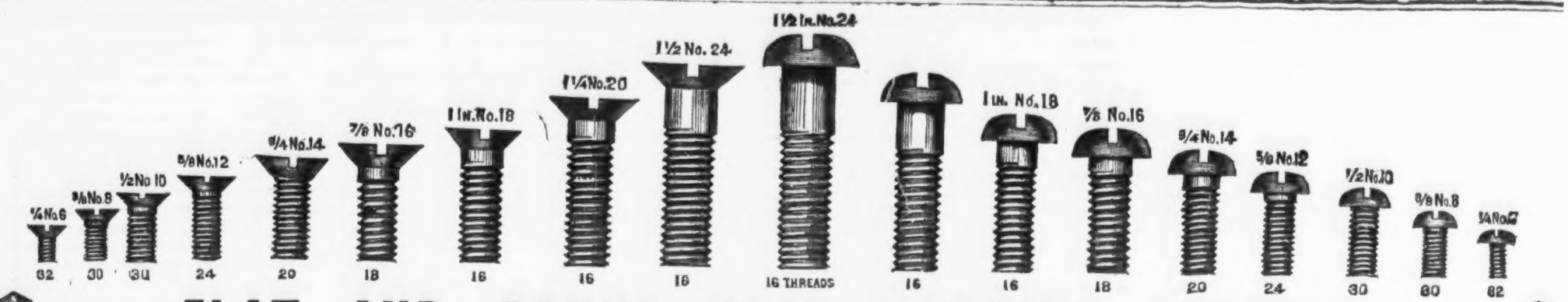

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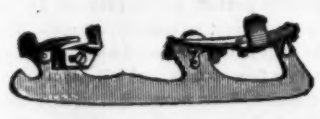

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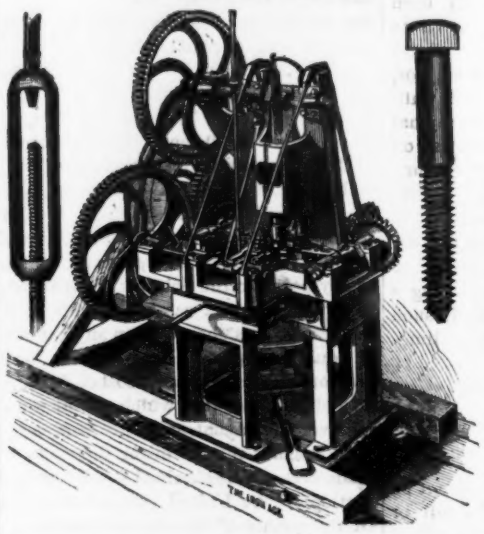

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The Iron Age.

New York, Thursday, November 5, 1874.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . . Editor.
JOHN S. KING . . . . Business Manager.

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Late Developments of Spathic and Hematite Ores on the Hudson River.

In a former article on the titaniferous magnetites of Northern New York, it was shown that in that region deposits of ore existed sufficient to supply, when developed, almost the entire furnace demand of the Atlantic slope. It is, however, somewhat uncommon to use magnetic ores alone in the blast furnace, but rather in admixture with easier smelted material, which is found in the brown hematite or limonite varieties. To some very extensive, lately discovered, and very favorably located deposits of the latter ores, we would here call the attention of those interested, believing that the information is of great value, from the fact that nothing has as yet been published in relation to them. The principal dependence of the blast furnaces on the Hudson River and, to a great extent, those of New Jersey and Eastern Pennsylvania, for brown hematite ores, has been upon the mines of Dutchess county, N. Y. These ores, formerly both rich and free from injurious elements, have of late years, either from carelessness in mining, or from the fact that under the current demand for iron ore, anything resembling that mineral found a ready market, somewhat declined in reputation and favor with furnacemen. They are, however, mined and sold in large quantities, and are easily smelted in admixture with the magnitites of Lake Champlain and the "red ore" of St. Lawrence and Jefferson counties. The ores of Dutchess county are, however, subject to the charges of railroad transportation before reaching the Hudson River, and cost, or have cost, an average of $7 to $7·50 per ton, delivered at furnaces on the river, in which they are used in proportion, if worked alone, of 2½ tons to the ton of iron, average furnace working.

The more recently discovered beds of ore here referred to, are situated in Columbia county, New York, within a distance not exceeding a mile from the shore of the Hudson River, and are found in the range of hills parallel with the line of that stream. The extreme southern limit of the deposit is at a point about opposite Livingston station, on the Hudson River Railroad, and running thence northwardly, and preserving the same relative distance from the river, to near Catskill station, on the same railroad. The whole territory here included originally formed part of the old Livingston Manor, and a portion of it is still within the limits of that property, the Livingston Mansion, "Oak Hill," with its magnificent view of the Hudson and the Catskill Mountains opposite, being but a short distance from the various points at which ore has been mined. These deposits were known to exist by the local owners of the soil for some years, but were never worked, nor, indeed, at all practically examined, until during the fall of 1873 and since that date. When worked in furnaces on the Hudson and in Pennsylvania, they have made a strong, tough iron, quite free from elements injurious to its quality. The characteristics of the ore vary somewhat; those of the lower or southern portion of the ridge indicating a spathic ore, gradually changing, if such change really takes place, to a true limonite at the northern end.

The importance of such a deposit of ores in contiguity to the great line of water transportation of New York State, and at a point where a sufficient depth of water for vessels of any draft is had, cannot be overestimated. The hight of the hill or ridge, in the summit of which the principal outcrop was found, is, by barometrical measurement, 400 feet above the level of the Hudson River, and continues at or near this hight for the whole distance, some three miles, to the northern extremity. Throughout the entire length of these beds the configuration of the country is such as to admit of the construction of tramways, plankroads, or narrow gauge railroads, to the river, at moderate cost; while the country roads, already opened, furnish easy access to shipping points on either the Hudson River Railroad or the river. The entire distance to the railroad and river being down grade will, of course, greatly facilitate the transportation of the ore by whatever style of road may be hereafter decided upon, when, as will undoubtedly be the case, the favorable location and excellent quantity of these ores are known and appreciated by the trade. As some guide to the immense quantity of ores here available, and the facility with which they can be mined, it is only necessary to state that at the first point worked in the southern extremity, the vein is fully 60 feet wide within the walls, free from dirt or foreign intercalated rock, and is mined by an open cut or quarry; teams being backed up to the vein, and the ore loaded directly into wagons without any selection or separation. At another outcrop, lower down the hill, and subsequently opened, the vein rapidly widens from a simple protrusion to a breast of over 30 feet in width. At the first named cut or quarry, the whole upper part of the hill, or mountain, as it would be termed in some localities, is an immense mass of ore forming the face of the hill for an area of several acres, and very closely resembling the Iron Mountain of Missouri in geographical features. Those acquainted with that immense deposit of ore would at once recognize the similarity in appearance. We are, however, chiefly concerned with the extent of this deposit as a means of supply of rich ore at prices which will enable the production of iron at reduced cost. The deposit, as above stated, is here shown, as developed by trial pits, and from clearly exposed outcrop, to extend for a distance of nearly, if not quite, three miles. Without taking into account its whole length, but only estimating that of the portion of the spathic ore as yet opened, and which forms relatively but a small proportion of the amount existing, if we place the length at 3000 yards, the depth at 600 feet and the width, as shown, at 60 feet, we have an amount of ore included in this area of 29,000,000 tons. The value of such a deposit of ore within 120 miles of New York city, and but a little over a mile from the navigation of the Hudson River, may well attract the attention of the iron master, since it offers the certainty of a practically unlimited supply of material, attainable under the most favorable conditions of expense. When, however, the entire cubical contents of this range of ore hills are computed at the same ratio, the amount of ore here at the command of the furnaces of New York, Massachusetts and Connecticut, as well as those of New Jersey and Eastern Pennsylvania, is of sufficient magnitude to encourage the manufacturer, even under the greatest possible depression in prices. The estimated cost of mining and transporting this ore is not, at outside figures and under present conditions, over $2 per ton, which includes mining, hauling or tramway charges, dockage and tipping or loading into boats; or, in other words, costing $2 per gross ton, f. o. b. on vessels of any size. If mined on a large scale, and with appliances for handling at mine and shipping point, this could be reduced considerably, but in all our calculations the effort is made to cover all charges likely to occur in practice, and represent actual expense to furnace owner purchasing at dock. Allowing, therefore, for royalty, interest and a fair, though not exorbitant, profit to the company mining, this ore can be sold f o. b. at dock for $3·50 per ton.

It is now on water navigation, and available under the cheap freights incident to that method of transportation. These will range at an almost nominal figure for the furnaces at Albany, Hudson, Poughkeepsie, Cold Spring, Manhattanville, etc., and in no case exceed 50 cents per ton, and generally under 30 cents. For the furnaces of New Jersey and Eastern Pennsylvania, including Philadelphia and vicinity, and the Lehigh Valley, they will go *via* river and canal without transhipment, at a freight cost delivered of $1·50 per gross ton, and to any point on the Schuylkill canal for $2 to $2·50. In most cases these prices will deliver the ores cheaper than any hematites of equal purity and richness can be locally had, or, respectivcly, at a cost of $3·74, $4, $5 and $5·75 per ton, which, for ores ranging over 45 per cent. metallic iron, and fit for Bessemer pig, is lower than any like grade ores can be obtained at present in the portion of the United States alluded to. Of the quality of the ores here referred to there is abundant evidence, as shown by the following analyses, which, it is to be remembered, are exclusively of those from surface outcrops, and before mining had opened the deposits at such depth as to insure its improvement. At the same time it is to be noted that the ore is rapidly improving in richness as mined.

An analysis of outcrop gave:

Peroxide of iron	66·37
Silica	21·71
Alumina	2·19
Lime	·42
Water and loss	9·31
Total	100·00

Subsequent analysis, made in December, 1873, by Dr. Wengell, chemist to the Bessemer Steel Works, Troy, gave as follows:

No. 1.

Metallic iron	57·42
Sulphur	0·039
Phosphorus	0·355

No. 2.

Metallic iron	48·22
Sulphur	0·033
Phosphorus	0·042

The latter contains also alumina and manganese, and both are justly regarded as good Bessemer ores. Analysis subsequently made gave the following results, both before and after roasting.

Analysis of iron ores from Columbia Co., N. Y. No. 1, red material; No. 2, gray material; No. 3 represents No. 2 after roasting:

	No. 1.	No. 2.	No. 3.
Oxide of iron	62·98	43·90	61·50
Silicious matter	21·05	22·25	31·15
Alumina and manganese	3·31	8·49	4·89
Lime and magnesia	1·00	1·75	2·45
Phosphoric acid	trace	trace	none
Sulphuric acid	..	trace	none
Carbonic acid	11·25	27·82	none
	99·59	99·21	99·99
Metallic iron	44 00	34·15	47·37

No. 1, roasted, yields oxide of iron ... 74·31
No. 1, " " metallic iron ... 49·91

From the above analyses of average samples of "run of mine," it is evident that these ores will compare very favorably with any of their class mined in the United States, and undoubtedly offer suitable material for Bessemer pig metal. Where they have been worked in the furnace, the testimony is in every case conclusive as to their merits. In July last the spathic ore, No. 2, was worked at the Jagger Iron Company's furnaces at Albany, with the testimony from the superintendent in charge at that time, that "the ore works "freely, produces a good fluid cinder and "gives a good yield of iron. It was used "in place of the America hematite, which "is known to be of a superior quality and "rich in iron; and our furnace yield was "increased and our production was greatly "improved in strength and quality." This would seem to offer sufficient testimony as to quality. Being, moreover, from its constituents, a very easily smelted ore, and possessing the desirable elements in admixture with the hard magnetites referred to in previous articles, this ore would suggest itself as the natural and proper admixture for the titanic ores of Lake Champlain. The tendency of the former being to a fluid cinder, and of the latter to furnish a stiff, difficultly smelted cinder, the result would be a normal scoria with a resulting iron of superior strength and purity. Estimating the cost of the titanic ores at $2 f.o.b. Lake Champlain, and the Columbia ores at $3·50 per ton f.o.b. on Hudson, let us put both in a furnace on that river, say, at Hudson, and estimate for present purposes that each costs $3·50 per ton, delivered. Putting the titanic ore at 50 per cent., and the hematite at only 40 per cent., and using 1¼ tons of the latter, we would have the ore to the ton of metal cost $7·87½, which would give as cost of iron produced, say:

2¼ tons of ore at $3·50	$7·87½
Coal	6·50
Labor	3·00
Interest, contingencies, &c	1·00
	$18·37½

The difference between this and the present cost, which is little, if any, under $26·50 at rates for magnetites, fossils and hematites used, would be in itself a satisfactory profit on the product of an average sized furnace of modern construction.

Of course, these ores offer similar advantages for admixture with any other magnetites abundant or desirable, and come under the cost of hematites native to most furnaces on the Atlantic slope. Their proximity to water, with the possibility of river or canal navigation, or both, to most centers of consumption, and by railroad after the close of navigation, together with their great abundance, make them peculiarly valuable to furnace owners, and of consequent importance to the trade at large. Why such an extensive deposit has been neglected up to this period, is one of the vagaries which seem to have constantly attended the exploration of our mineral wealth. The Port Henry ores were first worked as a material for fertilizers, phosphate of lime. The Franklinite, of New Jersey, was first worked for zinc alone, instead of spiegel. The specular ores of Lake Superior were rejected by the furnaces of the Mahoning Valley, because they were "slate, not iron;" and as a part of the doctrine of compensation, it would seem the discovery of these on the Hudson was retarded until a depression in prices required the supply of first-class material at a low price.

Foreign and American Shipping.

Various causes have been at work for the past few years, which have imparted an extraordinary stimulus to the multiplication of European steamship lines. Soon after the close of the Franco-German war, the influx of the war indemnity money into Germany lent activity to trade and to undertakings of all kinds. The Germans, although usually of rather a frugal and saving disposition, suddenly became luxurious, and from staid and conservative habits of business launched out into stock gambling, into the formation of financial rings and syndicates, and all sorts of real estate speculations and industrial enterprises. Banks to pander to these propensities sprang up like mushrooms, and the speculative mania spreading to Austria and Switzerland, the whole of Central Europe was soon involved in a headlong race for sudden wealth, only equaled by the petroleum excitement in this country ten years ago. Trade expanded and flourished, and our own business relations with those countries materially increased. While goods were moving into and out of Central Europe in a rapidly increasing ratio, large masses of the people left Germany, and especially the newly acquired French provinces. The so-called "militarism" being triumphant through the success which crowned the campaigns of 1866 and 1870, there was thenceforth the strictest enforcement of the Prussian military law, and large numbers of able bodied young men belonging to the middle and laboring classes emigrated to America. The Vienna exhibition and a short crop of grain aiding, there was evidently, for the time being, a lack of sufficient steamers or sailing craft to move the ocean freights and passengers. The general activity did not remain confined to the German and Dutch ports; it spread into France, for the shipping of emigrants from Alsace-Lorraine, and into England for the forwarding of Continental and Irish emigrants. While the European grain and produce crops were short, we had abundance, at least of the former, and aside from our cotton, our shipments were larger than ever before. Hence the doubling and trebling of steamship lines on the Atlantic during the past four years.

The panic of 1873 was the first note of warning to the steamship companies. Our imports and immigration fell off together, and now, by reason of an abundant European grain crop, the several lines engaged in the North Atlantic trade are likely to suffer from insufficient business for many months to come. To own a line of half a dozen or more steamers, each one making a loss of from ten to twenty thousand dollars on every round trip, is not calculated to make the stockholders happy, and one steamer after another is withdrawn and laid up, or started off to pick up freights at one or the other of the South American ports.

It is a noteworthy fact, however, that while the foreign lines plying between our own and North European ports are now suffering heavy losses, those carrying the American flag and plying in American waters, or across the Pacific, are enjoying a substantial and increasing prosperity. In other words, the positions of American and foreign lines are completely reversed. While we are launching splendid iron steamships at Chester, Philadelphia and Wilmington, and have a profitable trade for them at home, in Spanish-American waters and on the Pacific, Europeans are now enjoying the satisfaction of losing the money they have made in years past in the carrying trade. We have no doubt that, within a few years, we shall be competing successfully with them for the North Atlantic trade. While iron and labor are becoming steadily dearer in Europe, they are becoming steadily cheaper here, and there is no good reason why we should not soon build iron ships for foreign shippers, as we now build locomotives and cars for foreign railway companies. In the meantime, we have before us the opportunity of establishing and maintaining a profitable traffic carried on in American ships between our own and the near by foreign ports, as well as on the Pacific, and with a foothold already gained on the Atlantic, in the successful establishment of the American Line of Philadelphia, we may conclude that the uneasy spirits who are constantly writing and preaching homilies on the evils of protection and the beauties of free trade, will soon have to find some other text than "the decadence of American shipping."

It is unnecessary at this time to recapitulate the difficulties with which we have had to contend since the close of the war in 1865, as regards the re-establishment of our merchant navy. But in proportion to the magnitude of these difficulties, is the credit due those who have re-established it on a firm and profitable basis. It is another proof of our unlimited resources of energy and materials, as well as of our capacity to turn these resources to account. When we remember how recent is the establishment of the first iron ship yard in this country, and that American iron ships now compare favorably in everything, cost included, with the best of those built in foreign waters, we may safely predict a great and glorious conquest of the "empire of the seas" before many years, by vessels which will carry our flag on both oceans.

Mr. Kelly on Reciprocity with Canada.

Last Wednesday evening Hon. Wm. D. Kelly, M. C., of Philadelphia, delivered an able and interesting address in the Academy of Music, in that city, on the subject of commercial reciprocity between the United States and Canada. We regret that the limited space at our command this week does not permit us to print it in full, or even to give extended extracts from it. The whole argument, however, is summed up in a few words, which we quote from the concluding paragraph of the address: "Trade between the Dominion and us can "be reciprocal only when the same flag "shall wave over both countries, and the "people of each shall bear their share of "the burdens imposed upon us by the re-"cent war, which the Canadians did so "much to prolong. Then labor in either "country will find equal rewards, which "it does not now." This is to the point, and will commend itself to the understanding of thousands who care very little for either political economy or statistics. Countries producing under conditions so widely different as those which prevail on opposite sides of the St. Lawrence, cannot have a commercial reciprocity that will prove mutually advantageous. Under such an arrangement, it would be cheaper and more profitable to manufacture in Canada for the United States market than to manufacture here for the home market; and while the effect of throwing open our border custom houses to Canadian products might not be immediately injurious to our own manufacturing prosperity, there is every reason to believe that in the course of years we should, by such a policy, build up Canadian industries at the expense of our own. Immigration would be attracted

thither, capital would follow immigration, and any one who wanted to make goods for the American trade would naturally go there to do it. If Canada wants reciprocity she should have it only on the condition of joining her fortunes with those of the republic. This may come about in time, but if we correctly understand the sentiments of the people of that country, they have no present desire to share with us the burdens of taxation imposed by the late war, nor to adopt our political system. In the mean time, there is no more reason why we should have commercial reciprocity with Canada than with any other country. We have a *Zona Libre* on our southern border, which has given the government trouble enough already. With Canada, beside, as a safe and comfortable base of operations for smugglers, we should need a vastly increased force of customs officers, and detectives of superhuman intelligence, to keep out British manufactures while those of Canada came in. The experiment might work well enough for twelve months, but before the pending treaty had expired by limitation, we should find a great and powerful competitor on our northern border in the enjoyment of a prosperity which, under existing conditions, would have come to us.

The Stevens Battery.

The result of the offer of proposals for the purchase of the Stevens battery are calculated to make the great engineer whose name is identified with the sea monster a little uneasy, should the news reach him in the next world. The following bids were received :

T. F. Rowland, Brooklyn, N. Y., total offer for the 15 lots, $80,000.

The Chief of Bureau of Construction and Repairs of the United States Navy Department, for all of the lots, $145,000. This bid was accompanied with a proviso that if any foreign government offered more, with the intention of removing the ship from the United States, then the United States Navy Department would increase their bid so as to exceed any such offer, subject, however, to the approval of Congress, which would have to make an appropriation for that purpose.

John Roach, New York, for total lots, $105,000.

John Stewart, New York, for lots 14 and 15, $3000.

H. McKay, No. 52 Broadway, New York, for total lots, $50,000.

J. H. Wiggins, New York, for total lots, $60,000.

John F. Feffenly, No. 533 Water street. New York, for lots 14 and 15, $4500.

N. Lassar & Son, Hoboken, for lots 14 and 15, $5274, and for lot 1, which consists of the hull, $20 per ton for the scrap iron, and $2600 for another lot.

A. Pervis & Son, Philadelphia, for lots 1 to 14, $52,000, and for lots 14 and 15, $5200.

That more and larger bids were not received from capitalists engaged in the shipping business, is well calculated to excite surprise. That she would have made the strongest, fastest and most profitable steamer afloat for the carrying of ocean freights, is admitted by all who are familiar with the principles of her construction. A better ship for freight and passenger transportation on the Atlantic could not have been devised, and in speed she would have sailed around the best English steamers. It is probably the intention of the government, which is the largest bidder, and will secure the vessel, to complete it as a battery, and it is to be congratulated on having secured so valuable a ship at a price which would not represent one year's interest on money already expended upon her. Such a chance does not come every day—we are happy to say.

The English iron masters who have expressed so much astonishment at the unwillingness of American iron masters to allow the markets of the United States to be thrown open to unrestricted foreign competition, now have an opportunity to see how they like competition themselves. A striking illustration of the keenness of Belgian competition for English orders comes to us from Sheffield. A large manufactory is building in that city, the total cost of which is estimated at £40,000. In computing his estimate, the builder obtained prices from both Belgian and English firms for wrought iron girders, &c. The former he found so much the lower in price that in a £5000 order he was enabled to effect a saving of £1000, being at the rate of 20 per cent., and the result was, as might have been expected, that he was successful in obtaining the contract. The estimates from the English houses were £23. 10/ per ton, while, from a Belgian firm, the price was only £18. 10/ per ton. The competition has also been keenly waged in Staffordshire as well as Yorkshire. In the Black Country a firm were engaged in the construction of a large fitting shop, and it was determined to use iron in extensive quantities. The difference in the quoted prices of English and Belgian houses was no less than £6 per ton—the former being £19. 4/ and the latter £13. 2/9. Under these circumstances, we do not think the English iron masters are likely to become enamored of foreign competition in their own cases. It is a very good thing to prescribe for us, so long as they want orders from here, but the pill is a very bitter one when they have to swallow it themselves.

An interesting statistical table was submitted to the French Society for the Advancement of Science, at Lille, showing the progressive stages of coal production in the six leading industrial countries of the world, from which we make the following abstract :

	England. Millions of Tons.	United States. Millions of Tons.	Germany. Millions of Tons.
1830	30	1½	1½
1840	34	3½	2¾
1850	56	5	4½
1860	85	15	12½
1870	118	39	26½
1872	132	43	33

	Belgium. Millions of Tons.	France. Millions of Tons.	Austria. Millions of Tons.
1830	2	1½	..
1840	4	3	..
1850	6	4½	..
1860	10	8½	2
1870	14	13	..
1872	16	15	5

The United States is the only one of these countries which has vast resources of coal still undeveloped, and, indeed, unknown. Our production, even as compared with that of other countries, gives but little indication of our productive capacity, and, fortunately for us, the time is a long way off when our posterity will be called upon to contemplate the possibility of an empty coal cellar.

The Iron Resources of the United States.

PROF. J. S. NEWBERY.*

(Continued).

THE CARBONATES OF IRON.

Spathic Iron (the crystalline or sparry carbonate) is one of the most important iron ores of Europe, and from its great purity is largely employed in the manufacture of steel. It is a little remarkable, however, that in the great varieties of useful minerals found in America, this ore of iron is apparently rare. Only two deposits of it are known in the United States which have any economic value. One of these is situated in Roxbury, Connecticut, where it forms a true fissure vein, which has been more or less worked as a silver, copper and iron mine for nearly a hundred years. Ore from this mine contains sulphides of iron, copper and zinc, which require to be removed before it can be successfully used, and the quantity is so limited that hitherto the working of the mine has not been remunerative.

The other deposit of sparry carbonate referred to is in Vermont, southeast of Burlington. It is similar in its general features to that of Roxbury, and has been somewhat worked by the Collins Iron Company, but not with very satisfactory results.

The earthy carbonate of iron ("Clay ironstone," "Shell ore," "Kidney ore") is found chiefly in the coal measures, where it forms nodules or "kidneys," which are imbedded in the shales interstratified with the coal seams. This variety of ore is sometimes called siderite, or spathic iron; but these names are only properly applied to the crystallized carbonate of iron.

In England and Wales the greater part of the iron made has been obtained from the clay ironstones. In this country, also, they have been much used, especially in Western Pennsylvania and Ohio; but they are now being rapidly superceded by the richer crystalline ores of Lake Superior and Missouri. The earthy carbonate is quite plenty in all parts of the Alleghany coal field, and occurs, though less abundantly, in Illinois and Missouri. It is also found in the series of rocks that contains the lignites of the Far West. These are mainly of Cretaceous age, but in many respects they surprisingly resemble the carboniferous coal measures. Clay ironstone usually contains from 33 to 35 per cent. of metallic iron. Where the nodules are thickly packed they may be mined by drifting; but in most localities they are too sparsely distributed to be mined for, and are gathered by "stripping" from the superficial deposits. In some parts of the Alleghany coal field—as in Southern Ohio, West Virginia and Western Pennsylvania—the earthy carbonate forms continuous sheets of ore from six to eighteen inches in thickness, usually associated with the limestones of the coal measures. These ore beds have supplied in former years nearly all the furnaces of Southern Ohio. In working them, it is found that a stratum one foot in thickness will pay well for systematic mining, and the cost to the proprietors of the ore delivered at the furnace, for the last five years, has been about $2·50 per ton.

Black band ore (also a carbonate of iron) is a bituminous shale containing from 20 to 40 per cent. of metallic iron, uniformly disseminated through it; and this is associated with 10 to 25 per cent. of combustible matter. The black band ores of Scotland, of which the utility was only discovered in 1801, now form the chief basis of the iron industry of that country. The iron produced from them is highly carbonized, very fusible, and admirably fitted for castings, but it contains considerable phosphorus, and cannot be economically employed for the manufacture of steel. Its application, however, in the arts, is so extensive that the famous Scotch pig—as it is called in commerce—is distributed from Scotland to almost all parts of the civilized world. In the United States, blackband iron ore has not been carefully sought, except in certain localities, and up to the present time we are scarcely informed as to the quantity or quality of the deposits we have of it. Many years ago it was recognized in Ohio, and for more than forty years has been locally quite largely mined and consumed there. It is found at two or three horizons in the coal measures, but chiefly at the top of the lower coal series, where it locally forms the roof of coal No. 7. It is there from three to ten feet in thickness, having the appearance of any other bituminous shale, from which it is distinguished only by its greater gravity. Unfortunately most of the blackband of the area referred to in Ohio has been cut away by the erosion of the broad valleys which traverse the coal measure plateau, and hence it occupies but a fragment of its ancient territory. Enough of it, however, remains to supply many furnaces for an indefinite period, and this district supports now an iron industry which is rapidly increasing in importance, and which is in all its conditions quite distinctive from any other in the country.

ANALYSES OF CARBONATE IRON ORES.

	Spathic, Vermont.	Kidney Ore, Ohio.	Kidney Ore, Ohio.	Blackband. Mineral Ridge, Ohio.	Blackband. Tuscarawas Co., Ohio. Raw.	Blackband. Tuscarawas Co., Ohio. Cal'd
Protoxide Iron	45·56	....	....	26·82	23·02	....
Peroxide Iron	....	12·34	7·60	8·94	8·79	75·00
Oxide of Manganese	2·62	1·70	1·35	1·00	1·70	1·65
Alumina	·79	0·50	2·60	trace.	0·70	0·60
Lime	·82	....	....	1·05	1·70	2·80
Magnesia	8·13	Carb. 5·33	Carb. 6·50	0·97	0·88	1·48
Sulphur	·91	trace.	0·18	0·18	0·11	trace.
Phosph'ic Acid	trace.	....	0·863	trace.	0·492	0·773
Silica	3·27	11·94	8·96	11·84	26·22	17·02
Water	....	·78	....	....	....	0·5
Volatile Matt'r	....	....	....	30·50	21·10	..
Carbonic Acid	38·16	....	....	18·30	15·00	....
Lime Phos'ate	....	1·74	....	....	....	....
Lime Carb'nate	....	8·59	7·35	....	....	....
Iron Carb'nate	....	56·23	64·17	....	....	....
Copper	trace.	....	....	....	....	....
Total	100·29	99·15	99·573	99·60	99·712	99·573
Metallic Iron	35·74	35·88	36·31	27·12	24·06	52·50
Phosphorus	trace.	0·797	0·376	trace.	0·216	0·34
Sulphur	·91	trace.	0·18	0·18	0·11	trace.

In the anthracite region about Pottsville, some black-band ore has been discovered, and that of excellent quality, but it is not yet demonstrated that the quantity is sufficiently large to justify our enumerating this among the iron resources of Pennsylvania. From the similarity of structure which prevails in the different parts of our coal fields, and the resemblance they bear to the coal basins of the Old World, where black-band is known to abound, it would be very surprising if no other deposits of this ore were found in the country than those now known. Resembling so little as black-band does any other variety of iron ore, the eye must be specially educated to detect it, and it is no wonder that it has generally escaped notice. It is, however, to be looked for in all of our coal basins, and every dark shale should receive inspection with a view to its discovery.

II. IRON MANUFACTURE.

In the preceding notes we have enumerated and briefly described the iron ores found in the United States, and have indicated the location and character of each of the more important deposits. We have thus hastily reviewed the nature and location of the materials—so far as ores are concerned—now in use by our iron manufacturers, and have pointed out the source of supply upon which we must depend in any future development of our iron industries.

Doubtless to many readers the facts which we have given would have a certain significance and interest if left to stand as written, without note or comment; but it has seemed to us that their import and value would be considerably enhanced if their bearing on the present and future of our iron industries could be distinctly shown. It is evident, however, that the necessary brevity of this article will forbid anything like a full and satisfactory discussion here of this great subject; but we take the liberty of adding below a few words on the present condition of manufactures of iron and steel, with some suggestions in regard to their possible expansion and improvement, which, we trust, will be looked upon as a not unwelcome supplement to what has gone before.

The production of iron in the United States was, in 1873, 2,868,278 tons, made in about 666 furnaces, mainly located in six "iron districts," which are briefly described below.

1. *The Iron District of the Northern Alleghanies*, in Eastern New York, New Jersey and Eastern Pennsylvania. The furnaces in this region number about 200. The production of iron is about 900,000 tons per annum, or one-third of the entire product of the United States. The fuel, except in a few charcoal furnaces, is anthracite from Pennsylvania. The ores are mainly magnetic and brown hematite, to which are added some specular ores mined at Rossie, N. Y., and imported from Algeria, and some Clinton ore brought from Central New York. The principal centers of manufacture are Port Henry, Troy, the banks of the Hudson, Orange county, N. Y., Ringwood, Phillipsburgh, Boonton, etc., N. J., and the Lehigh, Schuylkill and Susquehanna Valleys, in Pennsylvania. The fuel employed in this region (anthracite) is of the very best quality; it is, indeed, the type of excellence for smelting purposes, being highly concentrated, hard enough to bear the heaviest burdens, and containing but a small percentage of ash and sulphur. The iron produced is generally excellent for most purposes. The furnaces are usually from 45 to 60 feet in hight, with a diameter of bosh of from 13 to 16 feet, the maximum yield being about 300 tons per week. The average cost of production is, at present prices, $28 per ton at the furnace. The number of rolling mills in this district is very large, and the establishments in which pig and bar iron are further manufactured are innumerable. From the fact that the ore chiefly used in this region contains considerable phosphate of lime, the pig iron carries from 0·5 to 1·0 per cent. of phosphorus, and hence is not adapted to the manufacture of steel. There are, however, in this district three large and successful Bessemer steel works, at Troy, Bethlehem and Harrisburg, and one for the manufacture of steel by the Siemens Martin process, at Trenton. By a careful selection of the ores it is quite certain that sufficient steel can be produced here to supply the home demand. But the great centers of steel industry will be located in the Western States, where the ores are more free from phosphorus, and equally good fuel is attainable. From its proximity to the older centers of population, the manufacture of iron has here more maturity than anywhere else in the country. Time—an indispensable element in the growth of iron manufactures—has produced here not only a multiplication of furnaces and a magnitude of product, but the concentration of capital and the improvement of processes beyond what can be found elsewhere. It is easy to show, however, that the manufacture of iron is still susceptible of expansion and improvement in this district.

2. *District of the Southern Alleghanies*, in the States of Maryland, Virginia, North Carolina and Georgia. The number of furnaces in this district is about 40, of which one-half are in Eastern Maryland. The ores are magnetite, brown hematite and earthy carbonates, the last two chiefly used in Maryland. The fuel employed here is coke from Cumberland coal and Pennsylvania anthracite in Maryland; coke from Richmond coal and charcoal further South. The resources of this region have as yet been but partially developed. As has been already stated, the deposits of magnetic iron ore in Virginia, North Carolina and Georgia are very extensive, and some of these ores are equal in purity to any in the world. These are, however, for the most part, yet untouched. Many of them are covered with the primeval forests, where the land can be purchased for a trifle. When, however, a better state of things prevails in the social and political condition of the South, the great natural resources of this region will assert themselves. Capital, skill and enterprise will flow in, and another generation will see this the theatre of great industrial activity. The want which the manufacturer of iron will most feel in the southerly prolongation of the Alleghanies, will be that of a good and cheap mineral fuel. Charcoal may, however, be produced here in abundance for many years, and the excellent bituminous coals of East Tennessee and West Virginia will be within easy reach. We may expect, therefore, that this will in the future become one of the most important centers of iron production in the United States.

3. *District of Central Pennsylvania.* This name may be given to a region which has already considerable importance as a center of iron production, and is destined to take a still more conspicuous place in the iron industries of the country. It lies chiefly in Pennsylvania, where it covers the counties of Blair, Centre, Huntington, Franklin, Bedford and Cambria; also the western portion of Maryland and the central portion of New York. The ore used is chiefly Clinton, here largely developed. To this is added some brown hematite and coal measure carbonate, and also Lake Superior specular (at Johnstown), Rossie and magnetite (in New York).

The number of furnaces is about 100. The fuel used, one-half charcoal, the other half anthracite and coke; the latter made mainly from semi-bituminous (Blossburg, Broad Top and Cumberland) coal. The most important elements in the present and future of the iron manufacture in this district are the excellent semi-bituminous coals and heavy deposits of Clinton ore brought into close proximity. The chief centers of production are Johnstown, where the Cambria Iron Works are located—the most extensive in the United States—and the Broad Top region, where the iron is now made more cheaply that anywhere else in the Eastern States. Beside the Broad Top and Blossburgh coal fields, the famous Cumberland coal basin lies within this district. South of this, on the Upper Potomac, is another coal field of similar character, and along its margin beds of Clinton ore crop out which are unequaled in their magnitude. With these resources it is hardly possible that the manufacture of iron can fail to be largely expanded in this region.

4. *District of the Upper Ohio.*—This includes Western Pennsylvania, West Virginia, Eastern Ohio and Northern Kentucky. Of this district the chief center is Pittsburgh, now the most important iron market in the United States. The furnaces are located in the Mahoning and Shenango valleys, in and about Pittsburgh, in the valley of the Ohio, at Steubenville, Wheeling, Ironton, Ashland, etc. They number about one hundred and seventy-five. The ores used in this region are chiefly Lake Superior specular and coal measure carbonates, with a considerable importation of Canadian and Missouri ore. The fuels employed are, in nearly equal proportions, coke, raw bituminous coal, and charcoal—the mineral fuels, however, rapidly replacing the latter. In this district are several subdistricts, which present individual characteristics worthy of mention. 1st. Pittsburgh and Southwestern Pennsylvania. Here the fuel employed is mostly coke derived from the Pittsburgh seam about Pittsburgh and at Connellsville. The latter is the great coke making center of the country. The coke produced here is very dense and pure, and is, in fact, equal to any in the world. Its excellence is attested by the fact that it is largely shipped to supply furnaces even as far west as St. Louis. In most of the furnaces of this region about two tons of coke are used to make a ton of iron. At Pittsburgh, however, some furnaces have recently been constructed 85 feet in hight—the largest in the country—and it is claimed that in these a ton of iron is made from a ton and a quarter of coke. At Pittsburgh the manufacture of iron is carried on in all its varied branches; a large amount of cement steel is also made here; and furnaces have recently been erected for the manufacture of iron and steel by a direct process—invented by T. S. Blair—and one which promises to be eminently successful. 2d. The Shenango and Mahoning valleys. In these valleys and near them are located about 60 furnaces, all using for fuel the "Brier Hill" or "Ormsby" coal, and Lake Superior ore. The coal of this district is from the lowest seam (No. 1) in the Alleghany coal field. It is a hard, bright, open-burning bituminous coal, which is used in the raw state for smelting iron. It contains a small amount of ash and is remarkably free from sulphur, being in fact one of the best furnace fuels known. This is attested by the fact that a large amount of iron is made with it which ranks with charcoal iron, and is extensively used for car wheels, the manufacture of Bessemer steel, etc.

On the margin of this district, and sharing its facilities for the manufacture of iron, is Cleveland, now the greatest iron ore market in the country, and in which the iron industries are rapidly increasing in importance.

3d. The Hanging Rock sub-district, in Southern Ohio and Northeastern Kentucky. Here are 50 furnaces, all but 10 in Ohio, mostly using charcoal for fuel and coal measure ores. This was formerly the chief center of iron production in Ohio, and the iron made there has been of special excellence, but the supply of charcoal is limited; the furnaces are small, and are being rapidly superseded by those in which raw bituminous coal is used. This is of excellent quality, and is supplied from the fine coal fields of Perry, Hocking and Jackson county, Ohio and Ashland, Kentucky.

As a part of the iron district of the Upper Ohio, we should mention the black band iron region of the Tuscarawas Valley, in Ohio. The ore of this locality has been already mentioned. There are but five furnaces now in blast here, but they are making iron in a way peculiarly their own, at least for this section of the country, as they imitate precisely the manufacture of "Scotch pig" from the black band ore of Scotland. The fuel used here is raw coal from seam No. 1 (the Massillon coal).

In the region of the Upper Ohio the carbonates of the coal measures are found in greater abundance than in any other part of our country, and the manufacture of iron was begun and for a long time maintained by their use. These ores are, however, being gradually superseded by the richer crystalline ores brought from Lake Superior and Missouri, and it is evident that while they will continue to form an important element in the manufacture of iron, that will be based for the most part of the future on the use of foreign ores. These will, however, continue to be imported in greater quantities, attracted by the abundance of excellent coal. This is in fact by far the richest portion of the American coal fields. Including as it does the Kanawha Valley, where there is an unequaled concentration of coal; Western Pennsylvania, with its splendid Pittsburgh seam; Eastern Ohio, with its extended outcrop of the Brier Hill coal, and the Hocking Valley, with its Straitsville coal sometimes 12 feet in thickness—to say nothing of the intervening territory, wholly underlaid with coal seams—this district contains an amount of excellent fuel which will not only by exportation form the main spring of a great iron manufacture elsewhere, but will draw to itself the ores from the East, West, North and South, and make this the great center of iron manufacture in the country.

5. *District of the Upper Tennessee.*—This district includes the west slope of the Alleghanies, the valley of East Tennessee, North Georgia and Northern Alabama. It now contains about fifty furnaces. The fuel used is mainly charcoal, though excellent bituminous coal occurs over a large part of its area. The most abundant ore is the "Dye-stone," or Clinton ore, which stretches in an almost continuous belt from Cumberland Gap to Rome, Georgia, and occurs in strata of from two to ten feet thick. Large deposits of limonite are also found here, those of Northwestern Georgia and Northern Alabama being especially abundant and good, as well as lying in close proximity to the coal. In East Tennessee, south and east of Knoxville, deposits of rich and pure specular ore are known to exist, but their extent is not yet determined. Beds of oxide of manganese of superior quality are also found in the same region. The mineral resources of this district are not surpassed by those of any other portion of our country, but for the most part they still lie undeveloped. Iron is probably now made more cheaply here than anywhere else in the United States, and, with better facilities for transportation affording a better market, its production could be almost indefinitely increased. At present all industries languish here, and coal and iron properties of the greatest intrinsic value can be purchased at from $1 to $5 per acre. On the Lower Tennessee and Lower Cumberland a group of furnaces have been in operation for many years, the fuel used being charcoal, the ore—limonite—associated with the subcarboniferous limestone.

6. *The Missouri Iron District.*—The ores of this district constitute its special attraction. Those of Iron Mountain, Pilot Knob, Shepherd's Mountain, etc., are recognized as forming, perhaps, the most extensive deposits of rich and pure iron ore known in the world, and have been already noticed. In addition to these should be mentioned deposits of specular ore in the center of the State, of red hematite north of the Missouri, and of brown hematite, forming an immense number of deposits in the country surrounding the area of crystalline rocks and ores. The centers of manufacture are Carondelet, Pilot Knob, and Grand Tower at the mouth of the Big Muddy. The furnaces are 25 in number. The fuels used are charcoal in Central Missouri; at Carondelet and Grand Tower, half Connellsville coke, half Big Muddy coal. The great want of this region is cheap and good fuel. This will never be fully overcome, but will doubtless be partially met by improved methods for coking the Illinois coals. There is every reason to believe that a great iron industry will spring up in Missouri, but it is no less certain that a large part of the rich ores of the State will be shipped for manufacture to localities where good coal is more abundant.

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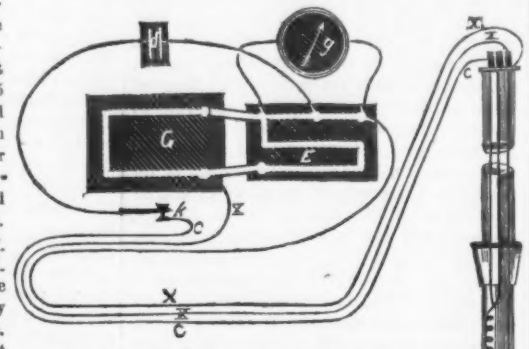
Report of the Committee of the British Association on Siemens' Electrical Pyrometer.

A committee consisting of Professer A. W. Williamson, Professer Sir W. Thomson, Professer Clark Maxwell, Professer G. C. Foster, Mr. Abel, Professer F. Jenkin, Mr. Siemens, and Mr. R. Sabine, was appointed some time ago by the British Association to test the action of Dr. Siemens' electrical pyrometer. They have already presented two interim reports, but as the first of these (*Rep. Brit. Assoc., Brighton Meeting*, 1872. p. 134) contained only a statement in general terms of the results of preliminary experiments, and as the second—communicated at the meeting in Bradford, in 1873—was lost after being placed in the hands of the officers of Section B, it seems desirable on this occasion to recapitulate the works of the committee from the beginning.

Four pyrometers, numbered by the makers 404, 411, 414, and 445 respectively, have been supplied for the purposes of the committee by Dr. Siemens during the course of the experiments. In all the instruments the part by which indications of change of temperature are given is identical, and consists of a length of fine platinum wire doubled back on itself, and coiled upon a cylinder of refractory fire clay. The ends of the coil are fastened to stout platinum wires of such a length that their farther extremities never reach a very high temperature, and these in their turn are connected by copper wires with binding screws on the outside of the case of the pyrometer. The copper wires are inclosed in a stout tube of wrought iron, about 3·5 centimetres* in diameter, and about 120 centimetres long, which projects from the furnace or other space whose temperature is required, and forms a handle and support for the whole instrument. The part to be inserted in the furnace—namely, the coil of platinum wire—is protected by a case or sheath, which is fastened by screws to one end of the iron tube. In pyrometer No. 404, which, it is understood, was constructed according to the plan usually adopted by Messrs. Siemens Brothers previously to the experiments of the committee, this sheath was made of a piece of wrought iron tubing closed at one end, and the fire clay cylinder supporting the platinum coil was inserted in it without any further protection, beyond a packing of asbestos employed to prevent it shifting or being injured by shaking. Pyrometers Nos. 411 and 414, beside an outer sheath of wrought iron, similar to that of 404, had a piece of stout platinum foil wrapped lightly round the fire-clay cylinder, but of course not touching the coil. In all other essential respects they were exactly like No. 404. In No. 445, instead of a wrought iron sheath, a platinum tube closed at one end was used to enclose the pyrometeric coil, so that in this instrument, although it had the usual long stem of wrought iron, no part of the iron was ever exposed to a red heat; otherwise, it was just like the others. In all cases the conducting wires, where they pass up the stem of the instrument, are kept from contact with it or with each other by being inserted in clay tubes like tobacco-pipe stems.



G. Resistance coils.
E, Platinum-silver resistance coils.
b, Testing battery.
g, Galvanometer.
k, Key.

The indications depend on the changes which the electrical resistance of the platinum coil undergoes when its temperature is altered. In order to avoid the errors that might otherwise arise from the heating of the leading wires connecting the pyrometer with the measuring apparatus, the undivided current of the testing battery is conveyed by a wire, which passes down the stem of the instrument and is denoted in the diagram by C, to the beginning of the pyrometer-coil, where it divides into two parts, one of which, after traversing the coil, is conveyed up the stem and back to the battery by a wire marked X_1 in the diagram, while the other part is conveyed by a precisely similar wire X to the standard against which the coil is to be measured. Thus, in the comparison, the resistance of the wire X_1 acts as an adition to that of the pyrometer coil, and that of the wire X, as an equal addition to the resistance of the standard. To insure that this compensation between the resistance of the leading wires is as accurate as possible, the three wires C, X, and X_1 are not only taken of the same length and gauge, but are insulated with a covering of India rubber (?) and tape and made into a cable of three strands, so that they are all of them exposed to similar conditions as to temperature, &c.

The most important points to ascertain in relation to the applicability of Siemens' pyrometer to the purposes for which it is intended, was how nearly the resistance of the coil is constant at a given temperature, and, in case of its being found to be permanently altered by exposure to high temperatures, to determine the extent of such alterations. The investigations of the committee have been confined to these two points. The whole of the measurements have been made in the Physical Laboratory of University College, London, by Professor G. C. Foster, or his assistant, Mr. W. Grant, or else by students working in the laboratory under Professor Foster's supervision. The thanks of the committee are specially due to Mr. Charles Law and to Mr. O. J. Lodge for their valuable aid thus rendered. The method adopted was that of the differential resistance measurer. Two sets of resistance coils, both of them adjusted to the British Association standard, were available for the measurements. One of them, made of platinum silver wire, by Messrs. Elliott Brothers, gave any whole number of ohms from 1 to 10,000; the other, of very thick German silver wire, by Mr. Grant, gave any whole number from 1 to 200. The resistance of all the pyrometers was marked upon them by the makers as being equal to ten Siemens' mercury units at 0° C., and, at the highest temperature to which any of them was exposed during the experiments, the resistance never rose beyond about 36 ohms; hence the resistances to be measured always lay within the range of the German silver coils. In order to be able to measure to within fractions of a unit, after the smallest whole number whose resistance exceeded that of the pyrometer had been found on the German silver coils, the other set—Elliott's—were connected in parallel circuit with these, so as to act as a "shunt," and the resistance was altered until the balance was got as accurately as possible. It was found that in this way changes of resistance amounting to 0·001 ohm, or to about ·0001 of the quantity to be measured, could be generally detected without much difficulty. When measurements were made at atmospheric temperatures, the pyrometers were always immersed in water nearly up to the junction of the sheath surrounding the coil with the stem, being placed in the water at least an hour before the measurement was made. Owing, however, to the conductivity of the mass of iron forming the stem, it was impossible to insure that the pyrometer wire was even nearly at the same temperature as the water, if this differed much from the temperature of the air in the laboratory, and consequently it was thought better not to attempt to get measurement at a fixed temperature, but to make the determination as nearly as might be at the temperature of the laboratory, and to reduce the results to a fixed temperature by calculation. As 10° C. was approximately the mean temperature at which the measures were actually taken, this was adopted as the temperature of reference.

The formula employed for correcting the observations for temperatures was obtained as follows: A piece of the same German silver wire as that of which the 10 ohm coil was made in the set of coils used, was immersed in water and its resistance measured, in an experiment at 17·6° and 100° C., and in another with a slightly different arrangement of the apparatus, at 18° and 100°. (We omit the formula owing to the crowded state of our columns).

The course of testing to which each pyrometer was subjected consisted in heating it repeatedly to redness and determining its resistance at the atmospheric temperature after each heating. The source of heat most often used was the laboratory fire in an open grate without blower, but in some of the later experiments a small Hoffman's gas combustion furnace, with three rows of clay burners, was employed. Rough measurements of the resistance of the pyrometers were made while they were in the fire in order to find out approximately how long the temperature continued to rise, and whether it was about the same in the different experiments.

It will be seen from the tables of results which follow that, on the whole, the late measurements agree better with each other than those made at the beginning of the trials. This is no doubt to a great extent a natural result of practice in the use of the methods,* but it is also probably due in part to the greater sensibility of the galvanometer employed in the more recent experiments. The galvanometer used at first was a thin wire double-needle galvanometer by Watkins & Hill, of about 13Ω ohms resistance; this necessitated the use of a comparatively powerful testing battery (three cells of Marie-Davy, zinc, carbon, sulphate of mercury), and it was consequently not always easy to prevent the resistance of the pyrometer being charged by the testing current. In all the recent experiments a reflecting galvanometer of very low resistance, by W. Grant, has been used, and a single Smee's cell has been used as the testing battery.

The results of the measurement of each pyrometer are here given in the order in which they were made. The symbols t, θ, R_θ, $R_{10\ 10}$ at the head of the columns have the meanings already given. G stands for the resistance of German silver coils, and E for the resistance of Elliott's coils inserted in multiple arc with G to balance the pyrometer $\frac{G\,E}{G+E} = R_\theta$.

From the results shown in tables it appears that the effect of repeated exposure to a red heat for some hours was to cause a considerable permanent increase of resistance in pyrometers 404, 411 and 414, while the resistance of 445 was almost unaffected by similar treatment, the experiments showing in this case a slight fall of resistance. The following table gives the resistance of each pyrometer at 10° before and after the series of heatings, the total change of resistance undergone by each pyrometer, and the change of temperature which would produce approximately the observed change of resistance:

Pyrometer.	Resistance at 10° C. Before heating.	Resistance at 10° C. After heating.	Change of resistance at 10° C.	Equiv. change of temperature.
No. 404.....	9·917	10·749	+0·832	+30° C.
No. 411.....	9·988	11·596	+1·608	+58
No. 414.....	9·920	11·089	+1·169	+43
No. 445.....	10·1 5	10·059	−0·046	−1·5

* One point, which was certainly not attended to sufficiently to begin with, was the importance of avoiding thermo-electric action between different parts of the circuit, in consequence of which, when the resistance of a pyrometer was taken within about a couple of hours of its being taken out of the fire, the result sometimes differed considerably from what was found next day

*A centimetre is a little less than an inch.

PYROMETER NO. 404.

Wrought iron sheath; coil not otherwise protected. This pyrometer was twice heated for a short time in the fire before the first measurement was made.

Index No.	t.	θ	G.	E.	$R_{t\theta}$	$R_{10\ 10}$
1	0°	11·9	10	259	9·628	9·911
2	10·2	12·	10	1140	9·913	9·914
3	8·5	9·9	10	870	9·886	9·927
4	Red hot	—	34	—	34·	—
5	7·	8·7	11	113	10·025	10·102
6	Red hot	—	36	3000	35·5	—
7	8·8	10·5	11	139	10·193	10·225
8	8·8	10·6	11	148	10·239	10·275
9	8·	10·1	11	147	10·234	10·291
10	Red hot	—	32	—	32·	—
11	9·	11·3	11	153	10·262	10·294
12	8·5	9·8	11	148·5	10·241	10·283
13	Red hot	—	36·	1500	36·2	—
14	9·5	11·15	11	158	10·284	10·295
15	9·6	11·3	11	160	10·292	10·307
16	10·5	11·5	11	166	10·316	10·307
17	11·3	12·1	11	181	10·422	10·309
18	18·	19·1	11	400	10·7056	10·504
19	18·	18·8	11	401	10·7063	10·503
20	20·1	21·5	11	393	10·705	10·447
21	10·5	13·	11	222	10·481	10·476
22	10·5	13·5	—	—	10·478	10·475
23	Red hot	—	—	—	34·5	—
24	8·5	11·5	—	—	10·531	10·578
25	Red hot	—	—	—	34·	—
26	8·5	12·	—	—	10·501	10·551
27	Red hot	—	—	—	34·	—
28	10·0	13·0	—	—	10·609	10·618
29	Red hot + 4 hours	—	—	—	33·	—
30	11·	13·	—	—	10·652	10·633
31	Red hot + 3½ hours	—	—	—	35·	—
32	11·5	13·75	—	—	10·793	10·761
33	10·	13·	—	—	10·758	10·760
34	17·22	18·	11	1570	10·9235	10·737
35	16·82	17·8	11	1385	10·913	10·737

PYROMETER NO. 411.

Wrought iron sheath; coil protected by casing of platinum foil.

Index No.	t.	θ	G	E.	$R_{t\theta}$	$R_{10\ 10}$
1	20 0°	21·3°	11	146	10·239	9·988
2	Red hot	—	31	—	31·	—
3	22·2	23·3	11	415	10·716	10·409
4	9·	11·7	—	—	10·398	10·433
5	Alternately heated to redness and cooled four times.	—	—	—	—	—
6	8	12·0	—	—	10·454	10·504
7	Red hot 4 hours.	—	—	—	—	—
8	10	13·3	—	—	11·049	11·053
9	Red hot, a small quantity of red oxide of iron having been put inside sheath.	—	—	—	—	—
10	12	13·0	—	—	11·150	11·099
11	Red hot 4 hours.	—	—	—	—	—
12	11·5	13·75	—	—	11·508	11·467
13	17·23	18·	12	1190	11·880	11·676
14	16·9	17·8	12	885	11·840	11·646

PYROMETER NO. 414.

Wrought iron sheath; coil protected by a casing of platinum foil, which was removed on 25th October, 1873.

Index No.	t.	θ	G	E.	$R_{t\theta}$	$R_{10\ 10}$
1	9·6	12·8°	10	990	9·900	9·920
2	9·5	Not taken	10	1300	9·924	—
3	Red hot	—	—	—	32	—
4	20·0	21·4	11	195	10·413	10·169
5	Red hot	—	—	—	35 nearly	—
6	21·8	22·8	11	472	10·749	10·462
7	10·	13·25	11	206·5	10·444	10·454
8	9·	11·7	—	—	10·421	10·455
9	Red hot + 4 hours	—	—	—	36·	—
10	8·5	12·0	—	—	10·881	10·923
11	Alternately heated and cooled four times.	—	—	—	—	—
12	10	13·0	—	—	10·987	10·997
13	11·25	13·9	—	—	11·017	10·992
14	Red hot + 4 hours	—	—	—	—	—
15	10·25	13·0	—	—	11·097	11·100
16	10·7	12·5	12	144	11·077	11·064
17	10·9	12·5	12	145	11·083	11·064
18	9·5	10·7	12	136·5	11·030	11·063
19	Red hot + 5 hours	—	—	—	33·3	—
20	7·5	9·9	12	134	11·014	11·090
21	8·4	10·0	12	137·5	11·037	11·086
22	9·4	8·7	12	143·8	11·076	11·090
23	17·23	18·0	12	189	11·284	11·090
24	16·9	17·9	12	186	11·273	11·089

PYROMETER NO. 445.

Coil surrounded by platinum sheath.

Index No.	t.	θ	G	E.	$R_{t\theta}$	$R_{10\ 10}$
1	10·4	13 0	11	124·7	10·108	10·105
2	Red hot 2 hours	—	—	—	35·5	—
3	10·25	11·5	11	121	10·083	10·080
4	Red hot 4 hours	—	—	—	35·5	—
5	10·3	11·4	11	119	10·069	10·064
6	9·25	11·3	11	116·25	10·049	10·075
7	9·45	11·0	11	117·45	10 038	10·074
8	Red hot 4 hours	—	—	—	36·8	—
9	9·4	10·4	11	115·6	10·044	10·064
10	7·0	8·0	11	108	9·983	10·070
11	10·0	8·2	11	119·7	10·074	10·069
12	9·7	8·4	11	118·5	10·066	10·070
13	17·23	18·0	11	148	10 039	10·040
14	19·91	17 9	11	146	10·229	10·040

Note.—A gas furnace was employed for experiment 19 with pyrometer 414, and for experiments 2 and 4 with pyrometer 445. In all other cases the source of heat employed was a common open fire.

By comparing the results given above, it will be seen that repeated measurements of the same pyrometer, without intermediate heating, often gave almost identical results if they were made within a few days of each other; but that measurements made after an interval of a few months, even when the pyrometer had not been heated in the meantime, sometimes differed decidedly from the results previously found. Possibly such changes may be due to alterations of the unsoldered connections of the conducting wires, but, whatever their cause, they would probably be met with in actual practice if the pyrometers were used during long periods of time.—*Engineer.*

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DEEP RIVER, Conn., Sept. 7, 1874.

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Oxygen with iron	26·010	Silicon	1·019
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Insoluble silicous matter	4·320	Phosphorus	·048
Sulphur, practically none		Sulphur, practically none	
Phosphorus	·038	Calcium	·140
Alumina	·280	Metallic iron	94·838
Lime	·140		100·00
Undetermined matter and loss	·592		
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Two Flue Boilers, 26 ft. long, 42 in. diam., each with two 14 in. flues, iron front, grates, &c., in good order.
One Flue Boiler, 34 ft. long, 48 in. diam. with two 14 in. flues, about as good as new.
One 7 Horse Portable Engine, of our own make, used only a few months, and in perfect order.
Two No. 6 Sturtevant Blowers. Two No. 4 McKenzie Blowers. One No. 6 Andrew's Centrifugal Pump. One No. 6 Turbinate Centrifugal Pump. Three No. 6 Cameron Pumps. One No. 2 Cameron Pump. One Knowle's Pump. One Earle Pump.
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Box 2806, N. Y.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Nov. 4, 1874.

During the past week, which has been interrupted by the occurrence of a legal holiday (Tuesday), Wall street has remained inactive and comparatively without interest. Money has been abundant at 2 @ 3 per cent. to borrowers on call, and negotiators of desirable commercial paper have been accommodated with discounts at 5 @ 7 per cent.

The gold market has been very firm—so firm that speculators have not been able to move the premium either way far enough to make a margin of profit or loss worth talking about, even on transactions between themselves. The rate charged borrowers is 1-32 of 1 per cent. per day. The following shows the daily range of the premium:

	Highest.	Lowest.
Thursday	110⅛	110⅛
Friday	110⅛	110⅛
Saturday	110⅛	110⅛
Monday	110⅛	110¼
Tuesday	....	....
Wednesday	110⅛	110⅛

The sales of gold by the Treasury during November will amount to $2,000,000, a quarter of that amount being sold each Thursday in the month. Last Thursday the awards were made at 110·10 @ 110·16.

Government bonds continue dull and firm. State bonds are also dull, and railway mortgages are in moderate investment demand. We give below the highest and lowest of to-day's quotations of governments.

In the stock market there has been but little activity. The principal dealings have been in Lake Shore, Erie, Western Union, Pacific Mail, Union Pacific and Wabash. The highest and lowest of to-day's quotations of active shares are given below.

The bank statement shows a large loss in specie, about half of which, however, is offset by a gain of legal tenders. The decrease in the specie average, it is believed, is closely connected with the operations in the gold loan market for the purpose of distressing borrowers of gold. The banks now hold $71,642,700 reserve, or $15,179,525 more than the law calls for. Last week the total reserve held was $72,416,000, or $15,839,800 more than the law required. The excess of reserve above the legal requirement is therefore not so much as last week by the sum of $660,275. The following shows the changes in the averages during the past week:

	Oct. 24.	Oct. 31.	Differences.
Loans	$281,873,500	$281,958,500	Inc. $85,000
Specie	13,585,200	12,021,100	Dec. 1,564,100
Leg. Ten	58,830,800	59,621,600	Inc. 790,800
Deposits	226,304,800	225,852,700	Dec. 452,100
Circulation	25,013,500	25,057,500	Inc. 44,000

The following tables show the movements in foreign trade for the week:

IMPORTS.

	1872.	1873.	1874.
Total for week	$6,487,625	$4,522,092	$4,770,530
Prev. reported	362,591,104	334,943,923	327,415,249
Since Jan. 1	$369,078,729	$338,466,015	$332,185,779

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	230	$2,507
Brass goods	26	2,184
Bronzes	32	7,301
Chains and anchors	140	7,522
Copper	....	933
Cutlery	57	22,576
Gas fixtures	5	674
Guns	47	10,750
Hardware	47	4,760
Iron, pig, tons	200	5,789
Iron sheet, tons	363	67,284
Railroad bars	1,584	29,732
Iron cotton ties	1,033	2,908
Iron, other, tons	186	12,994
Lead pigs	803	5,448
Metal goods	187	18,431
Nails	2	548
Needles	14	9,771
Per. caps	14	9,513
Saddlery	5	811
Steel	1,346	11,445
Silverware	3	786
Tin, boxes	30,685	241,640
Tin, slabs, 592	37,033	8,058
Wire	706	3,423
Zinc	44,200	2,715

EXPORTS EXCLUSIVE OF SPECIE.

	1872.	1873.	1874.
For the week	$5,470,104	$5,952,385	$5,236,420
Prev. reported	189,069,980	254,407,089	240,395,478
Since Jan 1	$194,540,084	$250,359,474	$245,631,598

EXPORTS OF SPECIE.

Total for the week	$400,121
Previously reported	43,634,591
Total since January 1, 1874	$44,034,712
Same time in 1873	43,736,183
Same time in 1872	62,276,967

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6's	117⅞	118⅛
U. S. 6s 1881, reg	118	118⅛
U. S. 6s, 1881, cou	118⅝	118¾
U. S. 1862, 5-20 reg	110¾	111
U. S. 5-20 1862, cou	110⅝	111
U. S. 5-20 1864, reg	111⅜	112⅛
U. S. 5-20 1864, cou	113⅛	113⅜
U. S. 5-20 1865, reg	113⅛	113⅜
U. S. 5-20 1865, cou	114⅛	114⅜
U. S. 5-20 1865, reg. new	116¼	116½
U. S. 5-20 1865, cou	116⅛	116⅜
U. S. 5-20 1867, reg	117⅛	117⅜
U. S. 5-20 1867, cou	117⅜	117⅝
U. S. 5-20 1868, reg	117⅜	117⅝
U. S. 5-20 1868, cou	117⅜	117⅞
U. S. 10-40 reg	111⅞	112
U. S. 10-40 cou	112⅜	112⅝
U. S. 5s, 1881, reg	111⅛	111⅜
U. S. 5s, 1881, cou	111⅛	111⅜

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	102	101⅜
Lake Shore	80¾	80¼
Rock Island	97⅝	96⅞
New Jersey Central	106⅞	106⅝
Del., Lack. and Western	109⅜	109
Wabash	29¼	29
Harlem	129¼	129¾
Western Union Telegraph	79¼	78⅞
Atlantic and Pacific Telegraph	18	17⅜
Northwestern	37⅝	36⅞
" Pref	52⅜	52⅛
Milwaukee & St. Paul	32⅛	32⅛
Pacific Mail	44⅛	43¾
Erie	28⅞	28⅛
Ohio & Mississippi	28⅜	27⅞
Union Pacific	34⅛	33⅞
C. C. & Ind. Central	9¾	9⅝

GENERAL HARDWARE.

Notwithstanding the demoralizing influence which election time usually brings to the business community, a fair trade has been done by our city houses during the week under review. The city is bare of out-of-town buyers, but letter orders and travelers' memorandums are numerous, and although these are, as a rule, for small assortments, still they aggregate no inconsiderable amounts. Few changes, and none of great importance, have occurred in the matter of prices.

We regret to have to announce the sudden death of Warren F. Shattuck, senior partner in the firm of W. F. Shattuck & Co., No. 113 Chambers street. The following taken, from "The *World*," contains all the particulars which have reached us. The time appointed for the funeral has not yet been determined, but will doubtless be published in the daily papers.

"Warren F. Shattuck, a wholesale Hardware merchant, of Chambers street, near Church, who resides near Newtown, Queens county, went upon the roof of the cupola of his house, yesterday, and while engaged there fell to the ground. He was picked up senseless and taken into the house. His injuries were found to be fatal, the spine being fractured and other internal injuries received. Mr. Shattuck was about fifty years of age and a prominent member of the Newtown Committee of seventy-one."

In Foreign Hardware there is very little to report. Coil Chain by the cask is quoted at 8 cents, gold, for ⅝ inch, and for large lots this price would be shaded a trifle. We continue our quotation of 8½ cents, gold, for ⅝ inch in broken packages.

Hermann Boker & Co. inform us that owing to a strike among the Scissors makers in Solingen, the manufacturers there have again closed their works, and, as a consequence, orders for importation are for the present declined. Their stock of these goods in store is still unbroken, and up to the present time no change in price has been made.

The Stair Rod manufacturers held a meeting on the 2d instant, and confirmed existing prices. We continue to quote these goods discount 30 per cent.

W. T. & J. Mersereau, 62 Duane street, have added to their line of specialties the neatest office calender we have yet seen. It is framed in brass, highly ornamented; one side contains a mirror, 6x3 inches, and the other side a revolving calender, showing under a glass surface the month, day of the month and day of the week. These goods are placed on the market at $12 per dozen, less 25 per cent. discount to the trade.

The Nail manufacturers represented in this city held a meeting on Thursday last, 29th ult., and reduced the card rate to $3·75 for 10d., formerly $4. This was done to bring the card nearer the selling price. There is little change to note in the condition of the market, prices remaining at about the same figures quoted a week ago. There is a slight improvement in the demand. We continue to quote 10d. at $3·60 @ $3·75, but the order should be very small indeed that could not be placed at the former figure, while for orders of 200 kegs and over $3·60 would be shaded. The following is the card rate adopted at the recent meeting:

COMMON, FENCE AND SHEATHING.

	Per keg.
10d. to 60d	$3·75
8d. and 9d	4·00
6d. and 7d	4·25
4d. and 5d	4·50
3d	5·25
3d. fine	6·00

COOPERS', SLATING AND TOBACCO.

10d. and larger	$4·25
8d	4·50
6d. and 7d	4·75
4d. and 5d	5·00
3d. Slating	5·75
Spikes, of all sizes	4·00

BOX AND FLOORING.

10d. and larger	$4·50
8d	4·75
6d. and 7d	5·00
4d. and 5d	5·25

BRADHEAD OR FINISHING.

10d. and larger	$4 75
8d	5·00
6d. and 7d	5·25
4d. and 5d	5·50

Fine Finishing, $1·25 a keg above same size Common.

CLINCH NAILS.

	½ kegs.
3 in. and larger	$5·25 $2 88
2½ and 2¾ in	5·50 3·00
2 in. and 2¼ in	5·75 3·13
1¾ in	6·00 3·25
1½ in	6·25 3·38

Trade in House Furnishing Goods, Tinners' Trimmings, &c., is without new feature. Prices are fairly sustained, and the demand, especially for city trade, is reported fair.

J. Clark Wilson & Co., 81 Beekman street, have in press the following revised discount sheet:

NEW YORK, Nov. 4, 1874.

The following changes in prices have been made since our discount sheet of September 22d was issued. Please correct your catalogue and price list accordingly:

Page in Catalogue.	Dis. per cent.
11, Ten Eyck's Standard Axes, reduce list $1 per dozen	net
47-50, Boxwood Rules	66⅔*
54, Base Knobs, Rubber Tipped	net

Birch.	B.	W.
Inch	2½	3 2½ 3
Per doz	$4·50	4·95 4·95 5·40

61, The following new numbers of Miller Bros. Pocket Cutlery have been added to the list, viz.:

No.	Price.	H'dle.	Length of Handle.	No. of Blades.
830	$14·00	Ivory	3¼ "	3
834	18 00	Shell	3¼ "	3
835	13·00	Buffalo	3¼ "	3
839	19·00	Pearl	3¼ "	3
910	13·00	Ivory	2½ "	4
914	15·00	Shell	2½ "	4
915	12·00	Buffalo	2½ "	4
919	16·00	Pearl	2½ "	4
920	15·00	Ivory	3¼ "	4
924	19·00	Shell	3¼ "	4
925	14·00	Buffalo	3¼ "	4
929	20·00	Pearl	3¼ "	4

62, New Razors, add to list No. 76, $6·50; 77, 5·50 per doz 5

69, Stevens' Mitre Boards, add No. 2, with gauge, $7 each 20

73, Zinc Glaziers' Points 20*

82, American Butt Co. Narrow Cast Butts 35

128, Hand Bells 66⅔*
155, Star Tumbler Lanterns, reduced to $3·50 ₱ doz.
338, Palmer's Door and Gate Springs 20
338, Torrey's Door Springs 50*
348, Change list of Carr's Furnace Scoops to $8·75 per dozen 12½
349, Scythe Snaths 20
356-357, Spring Balances 35
357, "H. Clark" Platform Scales 25*
367, Tin Can Thermometers 50*
373, Strap and T Hinges 33⅓*
374, Clark's Bind Hinges 50&10*
381, Rack Pulleys 10
391, Lightning Cross-Cut Saws 10&5
393, Brass and Copper Wire, add 4c. per lb. to the list 10
396, Hotchkiss' Curry Combs 20*
399, Ox Muzzles 20
405, Eureka Can Open's, reduced to $3·50 ₱ doz. net
407, Ellis' Box Scrapers 10
408, Stebbins' Molasses Gates 65*
411, Britannia Spoons 45*
414, Clinton Horse Nails, add 2c. per lb. to list net
426, Store Shelf Brackets 25
427, Drawer Pulls 40

* Indicates an extra discount of 10 per cent. for cash within 30 days.

Our prices are subject to change without notice.

Wilson Bohannan, corner of Broadway and Kossuth streets, Brooklyn, N. Y., has recently added to his line of Brass Pad Locks with Brass Keys, a corresponding line with Improved Flat Steel Keys, the list for which is given below. Mr. Bohannan has had an experience of nearly twenty-five years in the manufacture of this class of goods, and has been awarded nine distinct patents for improvements in Locks. The factory is pleasantly situated, within easy reach of the East Brooklyn ferries, by street cars which pass the premises. The factory is complete with all the machinery, tools, brass foundry, &c., necessary for the successful prosecution of a large business. In addition to the regular line of Pad Locks, they make to order special locks for railroad companies of any weight, size or peculiarity, keeping the patterns for the exclusive use of the parties ordering them; they are also making for railroad companies and car shops, &c., a handsome line of Passenger Car Locks, finished in bronze, nickel plated and iron japanned; for these goods no list has, up to the present time, been issued. After an examination of the goods represented in the following list, we cheerfully commend them to the notice of the trade, and can say of them that they are a handsome line of goods, strongly made and thoroughly tested before leaving the factory. For quality, style and finish they will compare favorably with any similar goods on the market. This list is subject to discount 20 to 25 per cent., according to quantity:

Wilson Bohannan's Price List of Cast Brass Patent Rack Tumbler Spring Pad Locks.

New No.	Old No.		Per doz. 12 Keyed.	Per doz 24 K'ed.
70	0	1½ inch	$3·50	4 30
71	1	1¾ "	4·00	5·00
72	2	1½ " Tumbler	6·25	7·25
73	3	1¾ " "	7·25	8·25
74	4	2 " " Plain Drop	8·25	9·50
75	4A, 2	inch Tumbler, Plain Drop and Chain	9·50	10·75
76	4B, 2	inch Tumbler, Spr'g Drop	9·25	10·50
77	4C, 2	inch Tumbler, Spr'g Drop and Chain	10·50	11·75
78	5	2¼ inch Tumbler, Plain Drop	9·00	10·25
79	5A.	2¼ inch Tumbler, Plain Drop and Chain	10·25	11·50
80	5B,	2¼ inch Tumbler, Spr'g Drop	10·00	11·25
81	5C,	2¼ inch Tumbler, Spr'g Drop and Chain	11·25	12·50
82	6	2½ inch Tumbler, Plain Drop	10·25	11·75
83	6A,	2½ inch Tumbler, Plain Drop and Chain	11·50	13·00
84	6B,	2½ inch Tumbler, Spr'g Drop	11·25	12·75
85	6C,	2½ inch Tumbler, Spr'g Drop and Chain	12·50	14·00
86	6D,	2½ inch, Tumbler, H'vy Spring Drop	12·25	13·75
87	7	2¾ inch Tumbler, Spr'g Drop and Chain for Railroad Cars and Switches	14·00	15·50
88	7A,	2¾ inch Tumbler, H'vy, Spring Drop and Chain for Railroad Cars and Switches	15·00	16·50
89		2½ inch Waterproof, Tumbler, Heavy, Spring Drop and Chain for Railroad Cars and Switches	16·00	17·50
90	8	2¾ inch Tumbler, H'vy, Spring Drop	18·00	19·50
91	8A,	2¾ inch Tumbler, H'vy, Spring Drop and Chain	20·00	21·50
92	8	2¾ inch, 3 Tumblers, Heavy, Spring Drop	20·00	21·50
93	8A,	2¾ inch 3 Tumblers, Heavy, Spring Drop and Chain	22·00	23·50
94	9	3 inch Tumbler, H'vy, Spring Drop	25·00	27 00
95	9A,	3 inch Tumbler, H'vy, Spring Drop and Chain	26·50	28·50
96	9B,	3 inch, 3 Tumblers, Heavy, Spring Drop	30·00	32·00
97		3 inch, 3 Tumblers, Heavy, Spring Drop and Chain	32·00	34·00
98	10	3¼ inch, 3 Tumblers, Heavy, Spring Drop	35·00	37·00
99	10	3¼ inch, 3 Tumblers, Secret Drop	40·00	42·50
100		2¾ inch, 3 Tumblers, Flat Key	....	15·00
101		2¾ inch, 3 Tumblers, Flat Key and Chain	....	16·25

ALSO:

An Improved Stationary Freight Car Lock, Iron	24·00	....
An Improved Stationary Freight Car Lock, Brass	26·00	....
Extra Keys per doz.	1·75	....

Cast Brass Patent Rack Tumbler Spring Pad Locks, with Improved Flat Steel Key.

	₱ doz. 12 Keyed.	₱ doz 24 Keyed.
070, 1½ in., Flat Steel Key	$4·50	$5·50
071, 1¾ in., Flat Steel Key	5·00	6·00
072, 1½ in., Tumbler, Flat Steel Key	7·50	8·50
073, 1¾ inch, Tumbler, Flat Steel Key	8·50	9·75
074, 2 in., Tumbler, Flat Steel Key	9·50	10·75
075, 2 in., Tumbler, Flat Steel Key and Chain	10·75	12·00
078, 2¼ inch, Tumbler, Flat Steel Key	10·50	11·75
079, 2¼ inch, Tumbler, Flat Steel Key and Chain	11·75	13·00

These Locks are made on an improved plan, and for quality of metal, security, durability and beauty of finish, cannot be excelled. Packed in half dozen boxes, if desired.

Explanation: 070 is the same Lock as 70 New No. or 0 Old No. with the exception that it has a Flat Key.

Peck & Snyder, 126 Nassau street, have issued the following prices for their "American Club" and "Clipper" Skates for the season of 1874:

American Club Skates,	Polished	$5·00 a pair,	net.
" "	Blued Top	3·75 "	"
Clipper Club Skates,	"	2·60 "	"
" "	Polished	3·25 "	"

These goods are made for ladies or gentlemen. Sizes, 8½ to 11½ inches. They also offer a handsome line of Winslow's Wood Top Skates at the following: "On orders amounting to $100, 20 per cent. discount; amounting to $500, 25 per cent. discount.

The Enterprise Mfg. Co. of Pennsylvania, have issued the following list and discounts for the goods of their manufacture for the seasons of 1874 and '75:

AMERICAN COFFEE, DRUG AND SPICE MILLS.

No. 1	$2·00	No. 11	$18·00
No. 2	3·00	No. 12	22·00
No. 3	5·00	No. 13	26·00
No. 4	8·00	No. 14	30·00
No. 5	8·00	No. 15	32·00
No. 6	12·00	No. 16	37·00
No. 7	10·00	No. 17	40·00
No. 8	16·00	No. 18	45·00
No. 9	16·00	No. 19	75·00
No. 10	23·00	No. 20	100·00
No. 10 Mill, N'kel Pld H'per & Eagle Dome Top			35·00
No. 13 " " " " "			41 00
No. 14 " " " " "			45·00
No. 17 " " " " "			55 00
No. 18 " " " " "			60·00
No. 19 " " " " "			100·00
No. 20 " " " " "			120·00

Pulleys for Nos. 19 and 20 Mills, $10 extra. Pulleys for all other sizes, $5 extra. Extra Cutters for Nos. 19 and 20 Mills, $3. For Nos. 9 to 18 Mills, $1·50. For Nos. 5 to 8 Mills, $1. For Nos. 1 to 4 Mills, 75 cents.

Discount 20 per cent.

Improved Patent Suction and Force Measuring Faucets.

Per dozen $42·00
Discount 20 per cent.

Improved Patent Hollow Bung Hole Augers.

		Per doz.
No. 1, Small size, boring from	½ to 1⅛ inch	
No. 2, Medium size, "	1⅛ to 2 "	$24·00
No. 3, Large size, "	1⅝ to 3 "	

Discount 20 per cent.

Champion Tobacco, Herb and Root Cutters.

No. 1 per doz., $24·00
No. 2
Discount 20 per cent.

Enterprise Saw Set.

Per dozen $15·00
Discount 20 per cent.

Enterprise Barn Door Bolts.

7 inch per doz., $3·60
9 inch " 4·20
Discount 20 per cent.

Enterprise Self-Weighing Cheese Knives.

Each $12·00
Discount 20 per cent.

Sash Fasteners and Anti-Window Rattlers.

Per gross $1·25
Discount 20 per cent.

Mrs. Potts' Patent Smoothing Irons.

Per dozen sets $39·00
Discount 20 per cent.

Enterprise Champion Molasses Gates.

No. 2 per doz., $8·00
No. 3 " 9·00
No. 4 " 10·00
Discount 50 per cent.

Portable Coffee Roaster.

No. 1 $50·00
No. 2 65·00
No. 3 135·00
No. 4 275·00
Discount 10 per cent.

We mentioned in a former issue that J. Clark Wilson & Co. had in store a large stock of Files of various brands, being half of the manufactured stock of James Horner & Co. These goods have been placed on the market by Mrs. Horner, executrix of the estate of her late husband, James Horner, and will be sold without reserve or condition at prices much below current rates. The following is a memorandum of the stock, for which special prices will be given on application:

"VULCAN."

Tapers.—163½ doz., 3 inch; 407½, 3¾; 389½, 4; 664½, 4½; 135, 5; 25, 5½; 37, 6; 9, 7; ⅜, 8; 3¾, 9; 6½, 10; 3¾, 12.

Tapers, Double Cut to Point.—26 doz., 3 inch; 2½, 3½; 5, 4; 3, 4½; 20¾, 5.

Tapers, Single Cut to Point.—1⅛ doz., 3 inch; 7, 3½; ¾, 4; 1⅛, 4½; 12, 5.

Tapers, Slim.—2 doz., 4 inch; 2½, 4½; 3, 5; 1, 6; 1-6, 7.

Millsaw.—¾ doz., 3 inch; 8½, 5; 9¾, 6; 3¾, 7; 2, 8; 6½, 9; 46¾, 10; 11¾, 11; 31½, 12; 18, 13; 51½, 14; 19½, 15; 5¾, 16.

Mill, Second Cut.—3¼ doz., 7 inch; ½, 9; 2, 11; 8¼, 12; 1¼, 13; 14¾, 14; 1, 15.

Mill, Double Cut.—¾ doz., 8 inch; 2¾, 10; ¾, 12; ¼, 16.

Flat Warding.—¾ doz., 3 inch; 1½, 3½; 2, 4; ½, 5.

Flat Bastard.—5¾ doz., 3 inch; 5¾, 4; 1, 4½; 2, 5; 6, 6; 4, 7; 4¾, 8; 1½, 9; 8¾, 10; 15, 11; 20¾, 12; 8¾, 13; 17, 14; ¾, 15; 1½, 18.

Flat, Second Cut.—⅜ doz., 3 inch; ¼, 3½; 4, 4; ¼, 4½; 1, 5; 3½, 6; 4¼, 7; 4½, 8; 3¾, 9; 9½, 10; ⅛, 11; 6½, 12; 5⅛, 13; 3, 14; 1¼, 16.

Flat Smooth.—1 doz., 3 inch; 5, 4; 3, 5; 12, 6; 5, 8; 2, 9; 8½, 10; 8¾, 11; 7¼, 12; 12½, 13; 3½, 14; 1¼, 16.

Flat Dead Smooth.—⅛ doz., 12 inch.

Flat Rough.—1¾ doz., 9 inch; 1¾, 12; 2½, 14.

Half Round Bastard.—7½ doz., 3 inch; 2, 3½; 1½, 5; ⅛, 5½; 7½, 6; 2¾, 7; 4½, 8; 2, 9; 3¾, 10; 4½, 11; 5½, 12; 7¾, 13; 10½, 14.

Half Round, Second Cut.—11 doz., 4 inch; ⅛, 4½; 1, 6; 1¾, 7; 4, 8; ⅛, 10; 2¾, 11; 1¾, 12; 2½, 12; ½, 14; 1, 16.

Half Round, Smooth.—⅛ doz., 4½ inch; ¾, 5; 1¼, 6; 2¾, 8; 2, 9; 3, 10; 1½, 11; 1, 12; 1½, 13; 1¾, 14; ¾, 15; ¾, 16.

Hook Tooth.—2¼ doz., 8 inch; ¾, 9; 2½, 10.

Hand Bastard.—2½ doz., 3 inch; 7½, 4; 1½, 5; 11½, 6; 3½, 7; 6, 8; 3¾, 9; ¾, 10; 1½, 11; 17¾, 12; ½, 13; 2¾ 14; ½, 15; 3½, 16.

Hand, Second Cut.—3 doz., 3 inch; 2, 4; 3, 5; 9, 6; 1, 7; 12, 8; 5¾, 10; ⅛, 11; 1½, 12; ¾, 16.

Hand Smooth.—3½ doz., 3 inch; 2½, 4; 1½, 5; 4¾, 6; 1½, 7; 1. 10; ¾, 11; 3 1-6, 12; 4½, 16.

Hand, Dead Smooth.—⅛ doz., 12 inch.

Shoe Rasps,—1 doz., 6 inch; 7¾, 7; 4. 8; 4, 9.

Horse Rasps.—27½ doz., 12 inch; 51⅜, 13; 30½, 14; 5½, 15; ¾, 16.

Tanger Horse Rasps.—2 doz., 11 inch; 1½, 12; 3 11-121, 3; 4½, 14; 5-12, 15.

Square Bastard.—½ doz., 3½ inch; 1, 4; 3½, 6; 2, 7; 2, 8; 2½, 9; 5½, 10; 5¼, 11; 2½, 12; 1¾, 13; 8, 14; 2, 16.

Square Second Cut.—¾ doz., 14 inch.

Square Smooth.—½ doz., 9 inch; 1, 11; ¼, 12.

Dead Smooth.—¾ doz., 5 inch; ½, 7; 1, 8; ⅛, 10.

Square, Blunt Bastard.—¼ doz., 12 inch.

Round Bastard.—1 doz., 3 inch; 10½, 4; 5¾, 5; 9, 6; ¼, 7; 12, 8; 7½, 9; 10½, 10; 4¾, 11; ½, 12; ⅛, 11; ¾, 15; 4¾, 16.

Round, Second Cut.—¼ doz., 5 inch; ¼, 9; ¼, 12; 1¼, 14.

Round Smooth.—3 doz., 8 inch; ½, 9.

Round, Blunt Bastard.—⅛ doz., 14 inch.

Equaling Smooth —½ doz., 6 inch; ½, 14.

Key Seat Bastard.—5-12 doz., 16 inch.

Key Seat, Second Cut.—¼ doz., 16 inch.

Cabinet Files.—2½ doz., 6 inch, 1, 8; 2, 10.

Cabinet Rasps.—½ doz., 6 inch; ¾, 7; 1¼, 10.

Half Round Wood Rasps.—1½ doz., 6 inch; ⅛, 8; ¾, 16.

Flat Wood Rasps.—¼ doz., 8 inch; 3¼, 10; ¼, 11; ¼, 12.

Cant Files.—½ doz., 4½ inch.

Gin Saw.—½ doz., 4½ inch.

Pit Saw.—2 doz., 4½ inch; 2, 5; 3¾, 6; ⅛, 7.

Knife Sharpeners.—4½ doz.

"TURNER."

Round Bastard.—1 doz., 3 inch; 1¼, 13.

Half Round, Second Cut.—1 5-12 doz., 3 inch; 2½, 4; ⅛, 8; ½, 11.

Half Round Bastard.—1 doz., 3 inch; 3½, 3¾; 2, 11.

Half Round Smooth.—1¼ doz., 4 inch; 7⅛, 5; ⅛, 14.

"CURLEY."

Tapers.—½ doz., 3 inch; ⅛, 4; 1, 6.

Cabinet Files.—½ doz., 10 inch.

Mill Files.—¼ doz., 12 inch.

Horse Rasps.—3¼ doz., 12 inch; 3, 13.

Flat Bastard.—⅛ doz., 14 inch.

"GOVERNOR."

Taper.—1 doz., 4 inch; ½, 4½; ⅛, 5.

Half Round Bastard.—⅛ doz., 12 inch; ⅛, 14.

Mill Saw.—3 doz., 9 inch; ½, 12; ⅛, 14.

Horse Rasps.—1¾ doz., 12 inch; 1½, 13; 3 1-6, 14; 1¼, 15.

Flat Bastard.—⅛ doz., 12 inch; ⅛, 14.

"LOCOMOTIVE."

Tapers.—38 doz., 3 inch; 43, 3½; 17, 4; 78⅛, 4½; 19, 5; 6, 5½.

Half Round Bastard.—⅛ doz., 8 inch; ⅛, 9; ⅛, 10.

Tapers, Double Cut to Point.—1⅛ doz., 3⅛ inch; 1½, 4; 1⅛, 4½; 1, 6.

Half Round, Smooth.—6 doz., 4 inch; 4, 5.

Round Bastard.—4 doz., 5 inch; 3⅛, 6.

Hand Bastard.—½ doz., 7 inch.

Square.—½ doz., 9 inch.

Hand, Second Cut.—⅛ doz., 16 inch.

Mill Saw.—⅛ doz., 6 inch; 7, 9; 10, 10; 1½, 12; ⅛, 14.

Hand Smooth.—½ doz., 16 inch.

Flat Bastard.—3 doz., 10 inch; 2¾, 12; 1¼ 14.

Horse Rasps.—⅜ doz., 13 inch.

Flat, Second Cut.—⅛ doz., 10 inch.

Hook Tooth.—½ doz., 6 inch.

Flat, Smooth.—1 doz., 4 inch; ⅛, 5; 1⅛, 8; ⅛, 16.

"ÆTNA."

Tapers—6½ doz., 3 inch; 54½, 3½; 4½, 4; 14⅛, 4¾; 35, 5; 1, 6.

Mill Saw—3 doz., 6 inch; 5, 9; 6, 10; 5¾, 12; 1⅛, 13; 7, 14.

Flat Bastard—¾ doz., 4 inch; 5, 8; 5, 10; 6, 12; 14½, 14; ⅛, 15; 1½, 16.

Flat, Second Cut—2½ doz., 10 inch; 4½, 12; 2½, 14; 1½, 16.

Flat, Smooth—3 doz., 12 inch; 2¾, 14; 1⅛, 16.

Half Round Bastard—¼ doz., 4 inch; ¾, 8; ⅛, 10; 4, 12; ¾, 13.

Second Cut—⅛ doz., 10 inch.

Square Bastard—2½ doz., 5 inch; 2½, 6; 2½, 10; ¾, 12.

Flat, Smooth—¼ doz., 10 inch.

Round Bastard—2½ doz., 5 inch; 4, 6; 5½, 8; ⅛, 14.

Hand Bastard—4¾ doz., 12 inch; 5, 14, 4¾, 16.

Horse Rasps—4¾ doz., 12 inch; 2¼, 14; ⅛, 15.

Hand, Second Cut—2½ doz., 10 inch; 3½, 12; 2½, 14; 1½, 16.

Warding Files—2½ doz., 5 inch.

Hand, Smooth—2 doz., 8 inch; 1⅛, 10; 2¾, 14; 1, 16.

Cabinet Files—1¼ doz., 12 inch.

"BANNER."

Tapers—4 doz., 3 inch; 5, 3½; 6, 4; 547, 4½; 170, 5; 3, 5½; 6½, 6; ¾, 10.

Stub's Pattern, Double Cut to Point—8⅛ doz., 4½ inch.

Single Cut to Point—1½ doz., 4½ inch.

"J. RUSSELL."

Gin Saw.—1½ doz., 4 inch; 4½, 4½; 10, 5; 6 11-12, 6.

Tapers.—3 doz., 4½ inch; 4½, 5; 3, 5½.

Single Cut to Point.—3 doz., 5½ inch; 1, 12.

Double Cut to Point.—5-12 doz., 8 inch.

Double Cut Blunt.—4½ doz., 6 inch; ¾, 7.

Pit Saw.—3 doz., 3½ inch; 10½, 4; 3¾, 4½; 1, 5.

Hand Bastard.—1½ doz., 7 inch.

"HORNER."

Mill Saw.—4½ doz., 6 inch; 42, 13; 10¾, 14; 32¼, 15; 8, 16.

Mill, Second Cut.—⅜ doz., 13 inch; 5½, 14.

Mill, Double Cut.—6 doz., 7 inch; ¼, 13; ¼, 14.

Flat Rough.—¾ doz., 13 inch.

Flat Bastard.—2 doz., 5 inch; 3, 7; 3, 9; 2, 10; 9, 11; ¾, 13; ⅛, 15.

Flat, Second Cut.—⅜ doz., 3 inch; 1, 4; ⅛, 5; 4¾, 6; 1⅜, 7; ¾, 10; ⅛, 11; ⅛, 12.

Flat, Smooth.—⅜ doz., 4 inch; 1, 5; 1½, 14.

Half Round, Bastard.—8½ doz., 3 inch; 1⅛, 4; 4½, 9.

Half Round, Second Cut.—6½ doz., 4 inch; 2, 5; 1, 8; ⅛, 13.

Half Round, Smooth.—1 doz., 5 inch; 4, 8; 1¼, 9; 1, 11; ¾, 13; ⅛, 14.

Half Round, Rough.—¼ doz., 10 inch.

Hand Bastard.—1 doz., 4 inch; 4½, 7; 1, 8; 2⅛, 9; 1, 11; ¾, 13; ⅛, 14.

Hand, Second Cut.—½ doz., 6 inch; ⅛, 9; 2, 10; 7-12, 13; 7-12, 14.

Hand, Smooth.—1½ doz., 4 inch; 1, 10; 1¾, 12; 8¼, 14; ⅛, 16.

Square Bastard.—9 doz., 3 inch; 2, 5; 27½, 6; 3, 7; 1, 10; ⅛, 12; 3½, 13; 1⅛, 14; ⅛, 16.

Square Smooth.—¼ doz., 13 inch.

Round Blunt.—¼ doz., 14 inch.

Round Bastard.—10½ doz., 3 inch; 21, 5; 10, 6; ¼, 14; ¾, 15.

Flat Wood Rasps.—1-6 doz., 10 inch; 1⅛, 11.

Shoe Rasps.—10½ doz, 7 inch; 2½, 10.

Shoe Files.—⅛ doz, 8 inch; ⅛, 10.

Cabinet Rasps.—½ doz., 11 inch; ¼, 12; 1, 13; 1, 14; 2, 15; 2½, 16.

Cabinet Files.—¾ doz., 11 inch; ¼, 16.

Equaling Bastard.—1 doz., 7 inch; ¼, 10; ¼, 12; 2¼, 13; ⅛, 14.

Saw Handle Rasps.—7-12 doz., 13 inch.

Cross Files.—11-12 doz., 10 inch; ⅛, 11.

Gin Saw Files.—10-12 doz., 5 inch.

Pit Saw Files.—3 doz., 4 inch.

Double Cut, Blunt Saw Files.—6 doz., 5 inch.

"BELDE

Flat Bastard.—1 doz., 6 inch; 2⅛, 7; 3, 8; 2½, 9; 2, 10; 3 5-12, 11; 1⅜, 12, 1¾, 13; 1¾, 14; ⅜, 16.
Flat, Second Cut.—⅛ doz., 5 inch; ⅛, 8; ⅜, 10; ¼, 12.
Flat Smooth.—⅛ doz., 5 inch.
Half Round Bastard.—1 doz., 6 inch; 2, 7; 3, 8; 3⅛, 9; 7, 10; 2½, 11; 4½, 12; ¾, 14.
Half Round, Second Cut.—⅛ doz., 6 inch; ⅛, 9; 3⅛, 10; ⅜, 12.
Half Round, Smooth.—⅛ doz., 6 inch; ⅛, 7; 1, 8; 1, 10; ¼, 14.
Hand Bastard.—⅛ doz., 6 inch; ⅛, 8; ⅜, 12; ¾, 14; ⅜, 16.
Square Bastard.—⅛ doz., 8 inch; 2, 12; ¾, 14.
Round Bastard.—1 doz., 8 inch; ⅜, 9; ½, 10; ¾, 12; ½, 14.
Cabinet Files.—1 doz., 10 inch; 1½, 11; ¾, 12.
Hook Tooth.—1 doz., 8 inch; ⅜, 9; 11-12, 10.

We invite the attention of our readers to the advertisement, on page 24, of the "Iron Age" Cook Stove, manufactured by the Michigan Stove Co., of Detroit, Mich. This Stove combines some new and important improvements, presented for the first time in a Stove of its class. It has an illuminated front, and the fire-box is provided with a grate for the wood to rest on, thereby allowing the use of chips or short wood, as well as wood of the ordinary length. The broiling arrangement, provided for in the wing, is worthy of special mention—the bottom of the wing is provided with a grate, and air is supplied by means of a damper in front, thus the coals are readily kept bright, and the process of broiling greatly facilitated. This Stove is also provided with a copper reservoir, heated by direct draft, and will boil water in eighteen minutes—this reservoir is so arranged that it can be removed at any time without conflicting with the operation of the Stove. The "Iron Age," is attractive in design, well finished, and although originally intended for wood, will work equally well with coke or soft coal. The Michigan Stove Company make all their castings from best quality of Lake Superior Charcoal and other first-class brands of iron.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, Nov. 4, 1874.

Scotch Pig.—The demand is steady and prices are firmer, with a large amount of business doing. The following are makers' quotations:

Gartsherrie No. 1	105/
Coltness No. 1	105/
Glengarnock No. 1	96/
Eglinton No. 1	88/

Manufactured Iron.—The market is dull under a small demand, and quotations are nominal. Best Staffordshire Bars, £10. 5/ @ £11.

Rails.—The condition of the Rail market is unchanged and prices continue weak. We quote Welsh £7 @ £7. 10/.

IRON.

American Pig.—The depression in trade continues, and prices are, if anything, weaker in tone, through the necessity of realizing on the part of some of the companies. Stocks, particularly of Foundry Irons, are increasing, and purchasers are shy, believing that there will be still further reductions in prices. In this condition of the market it is very difficult to quote prices. Sales are reported of 250 tons No. 1 at $28·50; 200 tons No. 1 Thomas, on private terms, and 500 tons Gray Forge, also on private terms. We quote No. 1, $27 @ $29; No. 2, $26 @ $27, and Gray Forge, $23 @ $25.

Scotch Pig.—There is no improvement to note in the demand for Scotch Iron, and trade is restricted to small lots for consumption. We quote Glengarnock at $39; Coltness, $40 @ $42; and Eglinton, $37.

Bar.—The Philadelphia mills reduced the card rates on the 2d inst. to 2·8c. Pittsburgh mills are selling at 2·5c.

Rails.—There is little of interest to note in the Rail market. We quote Welsh, $48 @ $50, gold, and American, $52 @ $55, currency, for heavy section at mill.

Old Rails.—The market is quiet. A sale is reported of 3000 tons Old Ts, Western delivery, part at $27.

Scrap.—The sale of 200 tons reported by us last week, New Haven delivery, was made at $30. The market continues dull.

The following are BIGELOW & JOHNSTON'S prices current and remarks, under date of Oct. 31, 1874:

NEW RAILS.—*Foreign* remain as last quoted, there being little or no demand. In *American*, some thousands of tons have been placed on terms not made public, but all more or less on long credit. *Steel* Rails have been very quiet, but there are some transactions pending.

Foreign Iron Rails	gold.	$48·00 @ $49·00	
*American Iron Rails	currency,	55·00 @ 60·00	
Import at N. York this month, tons,			....
Previously since January 1	"		....
Total to date	"		....
Same time, 1873	"		41,449
Foreign Steel Rails	gold,	$82·00 @ $83·00	
*American Steel Rails	currency,	80·00 @ 83·00	
Import at N. Y. this month	tons,		3,427
Previously since Jan. 1	"		65,058
Total to date	"		68,485
Same time, 1873	"		80,574

OLD RAILS have moved more freely but at a decided reduction in rates. As low as $27 has been accepted for Western delivery. The quotation for D. H. in our last should have been £4. 17 6 f. o. b. London, instead of £4. 7,6. This is still the price there. Our stock of *Foreign* is now about exhausted.

Double Heads	currency,	nominal.
T or Flange	"	$30·00
U or Bridge	"	nominal.
Import at New York this month	tons,	....
Previously since January 1	"	2,235
Total to date	"	2,235
Same time, 1873	"	9,948

SCRAP IRON.—No change of moment, except that prices are a little weaker.

No. 1 Wrought currency, $32·00 @ $33·00

PIG IRON.—*American*, continues to droop, and to effect sales to any extent a considerable concession would still be necessary. *Scotch* keeps firm, but being mostly in one hand, attracts now very little general attention. Prices being $10 per ton above best American, it may be called a *fancy* article.

American Forge	currency,	$23·00 @ 25·00
No. 1 Foundry	"	27·00 @ 28·00
No. 2 Foundry	"	25·00 @ 26·00
Scotch No. 1 Foundry	"	37·00 @ 41·00

* These prices represent as nearly as possible the range, according to location of mill.

Import of Foreign this month	tons	1,350
Previously since Janus 1st	"	24,303
Total to date	"	25,853
Same time, 1873	"	56,461

METALS.

Copper.—The elections intervening, business has been less brisk than would otherwise have been the case. Beside the sale of 1,500,000 pounds Lake "futures," alluded to in our last report, 500,000 pounds, ditto, sold the same day, Wednesday of last week, same conditions, since when some 75,000 pounds Lake changed hands at 22⅛c., cash. Our market is quite firm at 22¼c., cash. We quote Baltimore 22c @ 22¼c. nominally, cash, and 23c., December, asked. Lake futures remain steady at 23c. European telegrams are of a most encouraging nature. On Saturday, Best Selected stood £92 at London, and Chili Bars were £83. 10/; on Monday the latter advanced to £85, and to-day the quotation there is £86. The principal reason why Copper continues to advance in the European markets, and along with it other metals, has to be searched for in the colossal armaments. It would seem that the German army, including the "Landsturm," will number something like 2,800,000 men, and in order to equip them vast amounts of Copper for cartridges, and other metals for similar purposes, are requisite. While Central Europe arms, the remaining nations are compelled to imitate the example set them; hence the growing demand, which places a new feature upon the metal position in Europe. Our West Coast correspondence, bearing date of October 2d, is to hand via Panama: "VALPARAISO.—*Copper* in Bars has been in request, but the offerings being light, sales have been restricted to 102 quintals at $16·50 on shore here, 1700 extra brand at $16·75 on shore at Coquimbo, and 4414 Lota at $17·10 on board, at which figures there are more purchasers. Of Regulus three cargoes of together 54,000 quintals sold at $7·20 on board. Nothing done for export in Ores. The following are the closing quotations: Bars, $16·50 on shore here offered, at Lota with 60/ freight per steamer, $17·10, on board, with sales; Regulus, 50 per cent., $7·20, on board offered, and Ore, 25 per cent., $2·95, on board offered. Exchange on London, 60 day's sight, 44d. @ 44¼d., 90 days, 44¼d. @ 44⅜d. per dollar." The manufactures of Copper are steady at the following quotations: New Sheathing, 28c., for over 12 oz.; Bolts and Braziers, 30c.; and Nails, 37c. @ 38c.; Bronze and Yellow Metal Sheathing, 21c. @ 21½c.; Yellow Metal Bolts, 28c.; and Yellow Metal Sheating Nails, 21c.

Tin.—The market has been dull, and nothing has transpired either on the spot or in lots to arrive. In a jobbing way the metal moves off steadily. We quote, in gold, as follows: Straits, 21¼c.; English Refined, 21¼c. @21½c.; L. and F., 21c. @ 21¼c.; and Banca, 25c. @ 25¼c. According to cable dispatches, the English market has been steady for the past fortnight, while Singapore has remained so for the past week. The quantity on the way from Australia to Europe is undoubtedly large, but its effect on the European markets may be put down as having been discounted, and as the general metal position there is a good one, Tin may easily come in for a share in the improvement; in other words, the appearances are that it has touched bottom for the present. We have gone so low here that a revival in the consumptive demand may easily bring about a healthy and lasting reaction. In Tin Plates the stagnation has continued, nothing having been done beyond a limited sale in a jobbing way, and we repeat our quotations, viz.: I. C. Charcoal, $9·50 @ $9·75, gold, per box; I. C. Coke, $7·62½ @ $7·75; Coke Terne, $6·87½ @ $7; and Charcoal Terne, $8·50 @ $8·75, all gold.

Lead.—A small business, to the extent of 100 tons all told, has been done in a retail way. Government has done nothing, and the generally established price for domestic remains $6·35, gold; but buyers keep aloof, having laid in a good supply at the time, and not wishing to increase their stock while they are doing next to nothing. Very little transpires in foreign, which is firmly held at 6⅝c., gold, and at this rate it is, we think, also obtainable to arrive. The European markets, from late accounts, are as buoyant and firm as ever, especially Marseilles, and the insecurity of travel in the Spanish Lead region seems to be so great that the proprietor of one of the leading mines was recently made prisoner by the Carlists, and would have lost his life, in all likelihood, had he not been allowed to depart by the leader of the forces, who chanced to be an old friend. That with similar incidents occurring, the production of, and trade in, Lead in the Peninsula should suffer, will surprise nobody, and the state of the European markets in the face of gigantic armaments is easily explained. There is no change in manufactures of Lead here, which remain steady at 8¾c., less 10 per cent. for Bar, Pipe and Sheet.

Spelter and Zinc.—On a good many occasions we have had an opportunity to specially refer to Domestic Spelter, and to the comparatively low price it commands. It is to be hoped that gradually it may work itself into favor with our manufacturers. With some brands this is already the case. Thus, the "Carondelet" brand, of Missouri, is getting to be a favorite with consumers, having steadily improved since its introduction two years ago. But, nevertheless, the disproportion in the market price obtained in comparison with Silesian, for even the best domestic article, remains a striking one. Sales of Domestic have, to a moderate extent, been made during the week at 6¾c., currency, which price has since been refused, and 6¾c., currency, asked instead, while in small lots the asking price is 7c., currency. Nothing has sold of foreign, limits having again been raised, the range now being 6⅞c. @ 7¼c., gold, insisted upon for good to select brands Silesian, the detailed limits being: W. H., 7¼c., gold; C. G. H., 7c., do., and Silesian Union, 6¾c., do. The identical causes hitherto given still operate on the Continent, where the supply falls to come up to the demand existing. There is no change in Sheet Zinc, which, with a moderate business doing, is worth from 8¾c. to 9c., gold.

Antimony.—This metal, as per cablegram from London to-day, has improved to £50, at which figure it is reported strong. We are firm here at 11⅜c. @ 12c., gold. Although lots are dropping in continually, consumption seems to absorb them with ease.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending November 3, 1874:

Hardware.

Boker Hermann & Co.
Mdse. pkgs., 5
Bergman Atholf,
Cases, 1
Frasse P. A. & Co.
Mdse. pkgs., 2
Friedmann & Lauterjung
Steelware, cs., 5
Field A. & Co.
Mdse. pkgs., 43
Fuller Bros.
Anvils, 130
Vises, cks., 3
Edge tools, cks., 6
Files, cks., 9
Curry combs, cks., 2
Chains, cks., 41
Packages, 61
Hutchinson J. W.
Arms, cs., 5
Hilger E. & Sons,
Mdse. pkgs., 3
Jackson R. D.
Per. caps, cs., 8
Laughland & Co.
Wire, pkgs., 9
Phelps, Bloom & Brown,
Packages, 2
Rumpf C. F.
Cases, 2
Stiner, Kahn & Co.
Packages, 3
Schoverling & Daly,
Mdse. pkgs., 3
Casks, 1
Sawyer John W.
Wire rope, coils, 4
Turnor R. A.
Packages, 8
Chains, cks., 10
Tillotson L. G. & Co.
Wire, lots, 776
Van Wart & McCoy,
Mdse. pkgs., 7
Weddigen & Co.
Cases, 4
Wiebusch F.
Packages, 116
Anvils, 131
Chains, loose, 4
Chains, cks., 16
Wolfe S. N. & Co.
Packages, 42
Order.
Casks, 7

Iron.

Lang W. Bailey & Co.
Bars, 63
Laughland & Co.
Hay bands, bdls., 800
Merchants' Dispatch Co.
Casks, 1
Phelps, Dodge & Co.
Sheet, bdls., 202
Order.
Railroad bars, 2332
Bars, 1169
Scrap, cs., 1935
Rings, 787
Pig, tons, 400

Steel.

Brown Wm.
Bundles, 26
Cases, 37
Tyng & Co.
Cases, 3
Woodford W. O.
Cases, 39
Order.
Bundles, 694
Bessemer rods, bdls., 149

Metals.

Byrne Joseph & Co.
Tin, bxs., 1000
Canadian Bank of Com.
Tin, slabs, 400
Cort N. L. & Son,
Terne plates, bxs., 180
Goodwin, Rice & Erwin,
Tin plates, bxs., 100
Mones A. & Co.
Scrap, copper, pkgs., 2
Naylor & Co.
Terne plates, bxs., 300
Phelps, Dodge & Co.
Tin plates, bxs., 25,-390
Tin, slabs, 650
Mdse. bbls., 25
Wheeler E. S.
Tin plates, bxs., 550
Order.
Lead, pigs, 2739
Lead, bars, 8
Tin plates, bxs., 200
Scrap, copper, bxs., 3

COAL.

We have no special feature of interest to report in the Coal market this week. Business remains very quiet under the late advance, and there is hardly anything doing to stimulate the demand.

The quantity sent from the Schuylkill region for the last week by rail was 122,742 tons; by canal, 36,790; for the week, 159,532 tons, against 82,820 for the corresponding week last year. Increase, for the week, 76,712 tons.

The supply sent from all the regions for the week was 508,179 tons Anthracite, and 77,419 Bituminous; for the week 585,598 tons, against 553,834 for the corresponding week last year. Increase, 131,764 tons.

The whole supply sent from all the regions so far this year is 17,540,257 tons, against 18,603,-138 tons to same period last year. Decrease so far this year 1,062,841 tons.

The quantity sent from the Schuylkill region for the last week was unusually large, nearly doubling the quantity sent for the corresponding week last year. In the month of November, however, they will slack off again as the stock is accumulating at Richmond, and freights to the East will show an upward tendency, as the shipping season draws to a close. Since the begining of September the Anthracite trade has been gaining on the supply of last year, while the Bituminous trade has been declining for several weeks past.

The following are the prices charged by the Delaware and Hudson Canal Company for Coal, deliverable f. o. b. at Rondout or Weehawken during the month of November, per ton of 2240 lbs.:

Furnace, Lump	$5·55
Steamer, Lump	5·65
Grate	5·75
Egg	5·90
Stove	6·40
Chesnut	5·35

The Bituminous trade still continues very dull, and prices are nominally unchanged. There is an improved demand for James River Carbonite, which is taking the place of high price Cannel Coal very largely. Our quotations are as follows: Cumberland, $6·50 @ $7; West Virginia, $7·40 @ $7·65; American Gas, $7·40 @ $8; Pennsylvania and Westmoreland, $7·50 @ $7·65; James River Steam, $6·25 @ $6·50; American Cannel, $12 @ $14; James River Carbonite, $9 @ $9·50.

The market for Foreign still continues dull, and prices are somewhat easier. We quote: Liverpool House Cannel, $17 @ $18; Liverpool Gas, $9 @ $10; Newcastle Gas, $8; Scotch, $8.

The following are the prices in gold, Nova Scotia Coals, delivered at the shipping ports, for the month of November:

Block House	$2·25	Pictou	$2·50
Gowrie	2·25	Little Glace Bay	2·00
Lingan	2·25	Caledonia	1·90
Sydney	2·50	Slack from 75c. to 80c.	

Freights to New York, $3·75 @ $4; to Boston, $3·75. Duty, 75c. per ton, gold.

The Coal transported over the Cumberland Branch Railroad during the week ending October 31, 1874, amounted to 6667 tons, as against 5888 tons shipped in the corresponding period of last year, showing an increase of 779 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 43,720 tons, against 55,497 tons shipped in 1873, a decrease of 11,777 tons.

OLD METALS, PAPER STOCK, &c.

The market for Old Metals has been very dull the past week, with the exception of Old Lead, which is in better demand, and quotations are more easily obtained. The Rag and Paper Stock Markets are still inactive; but prices, however, remain unaltered. The demand for Hemp and Grass Rope is very light, and stocks are abundant in dealers' hands. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.: Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5c.; Tea Lead, 4c.; Zinc, 4½c. @ 5c.; Pewter, No, 1, 19c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1¾c.; Sheet do., ¼c.; Cast, do., ½c. @ ⅝c.; Machinery, do., ⅝c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No 1, 6c. @ 6¼c.; No. 2, 2½c.; White, No. 1, 6c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 4½c. @ 5c.; Gunny Bagging, 1c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No 1, 4¼ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 3c. @ 3¼

PHILADELPHIA.

PHILADELPHIA, Nov. 3d, 1874.

There is no material change to note in the situation of the Iron market in this city. The improved demand for Rails, both Steel and Iron, noticed last week continues, and is further strengthened by advices from abroad, which indicate greater favor for American railroad securities. In Pig Iron prices are strictly nominal, sales being made at purchasers' terms, if at all, and governed by local charges for freight as well as the necessities of sellers. In Bars the Western cutting of prices has completely unsettled the market, and prices are again at sea. We hear of sales of Bars at as low prices as Pig Metal was sold at two years since, and certainly below cost of manufacture. In Rails, the transactions in Steel noted last week have been closed, and we hear of new contracts offering for considerable amounts. Iron Rails are also in better request, with, however, no improvement in prices. In the absence of any strictly reliable base upon which to quote, we give the following as prices ruling here, but shaded according to the views of seller and purchaser:

PIG METAL.—No. 1 Foundry, $28 to $29; No. 2, $25 to $26; Gray Forge, $23 to $25; White and Mottled, $18 to $20.

OLD RAILS—$28 to $30.

SCRAP—$32 to $33.

The sales include 1000 tons White Iron, $18·50; 500 tons 56s Rails, $56 at mill; 5000 tons Steel Rails, New Jersey Central Pennsylvania Steel Company; 6500 tons Steel Rails for the new road from Philadelphia to New York. Sales of No. 1 Foundry and No. 2 to 2000 tons at $28 and $25; 500 tons Old Rails, $29, New York delivery, 500 tons Old Rails, private terms; Scrap, 200 tons, $31·50 here.

PITTSBURGH.

PITTSBURGH, Nov. 3, 1874.

PIG IRON.—There is no improvement to report in the demand for this important article, and the general tone and spirit of the market continues in buyer's favor. As compared with the date of my last report, there has been no quotable change in prices, but within the past month there has been a decline of about one dollar per ton. Consumers are still buying very sparingly, carrying no more stock than is absolutely necessary, and it is not to be expected that they will stock up to any extent as long as the market continues in its present depressed condition, with a possibility, if not a probability, that prices will go still lower. The producing interest have been very much deceived in the course of the market during the past sixty days; they were, as a rule, pretty confident during the latter part of the summer that trade would certainly pick up during the fall, and many of them calculated upon realizing an advance of two to three dollars per ton. Instead of an improvement, however, business is not any better now than it was then, and instead of an advance prices are lower. There is but little hope now of any advance this year, hence producers who refused to accept the rates prevailing in August and September are willing, some of them anxious, to sell now at a decline of from $1 to $1·50 per ton; they are impressed with the conviction that Pig is destined to rule low for some time to come, consequently instead of wanting to hold they are anxious to realize, to close out all their high priced stock. It is apparent that the cost of manufacture will have to be reduced. In many localities this has been done already, and those that have not will be obliged to do likewise. It is certain that furnace men, as a rule, have not been realizing actual cost since the panic, and as there is no hope of an advance, it follows that the cost of manufacture must be cut down. Notwithstanding a large percentage of all the furnaces have blown out, there is reason to believe that the production is still in excess of the consumption, and that stocks in first hands instead of being diminished are holding their own, if not increasing.

QUOTATIONS.

No. 1 Foundry	$28·00 @ 29·00—4 mos.
No. 2 Foundry	26·00 @ 27·00—4 mos.
Gray Forge	25·00 @ 25·50—4 mos.
White and Mottled	23·00 @ 24·00—4 mos.
Hot Blast Charcoal	30·00 @ 35·00—4 mos.
Cold Blast Charcoal	40·00 @ 50·00—4 mos.

MANUFACTURED IRON.—The general position of the market for finished irons has not varied much since the date of my last review; business, while it is not what it should be or usually is at this particular time, is perhaps about all that we can reasonably expect. Trade has not come up to the expectations of our manufacturers, generally; orders have been coming in sparingly for some time past, but the most if not all the mills will have all they can do during the remainder of the year, and it is hoped and expected that there will be a general revival in business in January. Prices continue weak and drooping; Merchant Bars may be fairly quoted at 2¼c., usual time; however the cost of manufacture is lower, as the raw article has dropped fully one dollar per ton within the past few weeks, and quite a number of the mills have made a reduction of ten per cent. in wages.

NAILS.—The Nail trade continues exceedingly dull, as it nearly always is at this season of the year, and no material or permanent improvement is expected until February, when jobbers generally commence to stock up for their spring trade. Prices, however, are fairly sustained, $3·35, 60 days, with two per cent. off for cash. The majority of the factories here have either shut down or reduced their production, and a general suspension during the next sixty days is not improbable, as makers are not inclined to accumulate stock in the present condition of affairs.

STEEL.—There is nothing new or important to record in this important branch of trade. Business, while it cannot be termed active, is about all that can be expected, and the mills are all in operation, although some of them are not working up to their full capacity. There is still more or less complaining in regard to prices, but it is said that there is less cutting now than there has been.

SCRAP IRON.—There is no improvement in the demand for Scrap, and trade, so some of the dealers allege, is more depressed now than it has been at any time since the panic, with but little prospect of any change for the better during the balance of the year.

BUYING QUOTATIONS—CASH.

	Per net ton.
Car Springs	$40·00
Car Axles	35·00
Railroad Scrap	27·50
Blacksmith Scrap	23·00
Machinery Metal	17·00
Stove Plate	13·00
Wrought Railrosd Turnings	22·00
Boiler Plate	34·00
	Per gross ton.
Car Wheels	$25·00

THE OUTLOOK, FINANCIALLY.—The general outlook, financially, in manufacturing circles, is more encouraging now than for some time past; no failures or suspensions have been reported for several weeks, and, so I have been able to learn, none are expected. There is an absence of rumors which, up until quite recently, have been very common. Furthermore, it is hoped and expected that there will be a general revival in business early in 1875, if not before.

The Pittsburgh *Commercial* of October 31st says: The tendency of the market for Raw Iron has been downward for several weeks, and the price has at last touched $25, 4 months, for standard Gray Forge Iron. This was brought about during the week by a pressure to sell made by several parties from abroad, who were anxious to realize promptly. The effect of the reduction has tended to check, rather than stimulate, the demand, and the consequence is a rather slim report. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

200 tons gray forge	$25·50—5 mos.
200 tons gray forge	25·00—4 mos.
150 tons open gray forge	25·75—4 mos.
100 tons gray forge	25·50—4 mos.
100 tons gray forge	24·50—cash.
50 tons mottled forge, medium	23·00—4 mos.
50 tons clear gray forge	25·50—4 mos.
40 tons No. 2 foundry	26·00—4 mos.
40 tons No. 1 foundry	27·00—4 mos.
20 tons No. 3 foundry	26·50—4 mos.
10 tons No. 1 foundry	27·00—4 mos.
10 tons No. 2 foundry	29·00—4 mos.

CONNELLSVILLE COKE.

100 tons gray forge	$25·50—4 mos.
100 tons gray forge	25·50—4 mos.
30 tons No. 1 foundry	27·50—4 mos.

CHARCOAL.

30 tons No. 1 foundry	$35·50 @ 37·00—4 mos.
50 tons No. 1 foundry	35·00—6 mos.

CLEVELAND.

Messrs. READ & DICKEY, Iron Brokers, under date of Nov. 2, write us as follows:

PIG IRON.—The market presents few features of change, unless it be an indication of weaker prices. Holders of Iron have lost all confidence in any near improvement, and are not making any effort to sell unless their necessities compel them; for this reason quotations are not so much reduced as might be expected, but sales are made, and Iron can be bought considerably lower than prices given. In all sales effected now the bearing of cash or time, and the credit and responsibility of the buyer, together with the necessities of sellers, all have a large influence in the price, and each point is fully canvassed, so that each sale is conducted on its own merit, and no satisfactory general price can therefore be given. The falling off of the mill demand has been more notable than any other feature, and consequently Gray Forge is proportionately weaker than other grades. Bessemer Pig alone, of all grades, seems to hold its own, and promises the earliest indications of improvement. We quote nominally as follows:

CHARCOAL PIG IRON FROM L. S. ORE.

Nos. 1 and 2	$31·00 @ 32·00—4 m.
No. 3	33·00—4 m.
No. 4	34·00—4 m.
No. 5	36·00—4 m.
No. 6	38·00—4 m.
Bessemer Metal, Charcoal	32·00—4 m.
Bessemer Metal, Bituminous	28·00—4 m.

BITUMINOUS PIG IRON FROM L. S. ORE.

No. 1 Foundry	$28·00—4 m.
No. 2 Foundry	27·00—4 m.
No. 1 Gray Forge Open Red Short	25·50—4 m.
Close " or Neutral	25·00—4 m.
White and Mottled	23·50—4 m.

FOUNDRY IRONS FROM BLACK BAND AND NATIVE ORES.

Massillon No. 1	$33·00—4 m.
Massillon No. 2	31·00—4 m.
"New Gartsherrie" No. 2	33·00—4 m.
Muck Bar	$44·00—60 days.
Iron Rails, according to section	$56·00 @ $60·00—cash.
Steel "	85·00—cash.

MANUFACTURED IRON.—The market, especially for Bars, Rods, &c., continues to grow in dullness, and there seems but little prospect of any immediate improvement. Manufacturers have got prices down to about where they started from early in August, and the indications are that before December 31st they may be yet lower. In Rails the signs are improving, there being a great many more inquiries and some fair transactions, although at prices which are ruinous to the mills. The long expected revival in the demand from railroad consumption seems to be close at hand, and although the near approach of winter will interfere to prevent its assuming any but meagre proportions this season, yet it is fair to hope that the advent of spring will find it restored to something like activity. As the want of Rails will also be followed by a demand for new rolling stock, to a considerable degree, all the various makers will receive some benefit from a renewal of the railroad trade.

SHEET IRON is growing a little weaker in price as the season contracts are becoming filled. The demand for the balance of the season promises to be light, and the price may, therefore, decline further, although a severe and prolonged winter would, no doubt, run present stocks very low, and, perhaps, necessitate, on the part of merchants, looking for additional supplies.

NAILS continue weak and unsatisfactory with no prospect, owing to the lateness of the season, for any permanent improvement until January. Prices at present are far below cost of production, and it is not improbable that a general closing of works for a month or two will soon be decided on. Prices from *store* continue unchanged, although indications are not wanting that liberal purchasers could obtain concessions. We quote Car lots as follows:

	60 days.
Bar, Band and Hoop Iron	$2·80
Sheet Iron, No. 24	4·80
Nails, 10d. to 60d	3·50
Boat Spikes, ¼ and larger	4·20

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Nov. 2d, write us as follows: The market continues dull, and with little that is encouraging in the outlook. Some further sales of round lots of Foundry Iron have been made on private terms. There is a moderate demand for Soft Irons for immediate consumption. There is some demand for Forge Iron, but only at low prices.

HOT BLAST CHARCOAL.

Hanging Rock	No. 1..₱ ton..	$31·00 @ 32·00	—4 mos.
" "	No. 2.....	28·00 @ 29·00	—4 mos.
" "	Forge.....	26·00 @ 27·00	—4 mos.
Tennessee	No. 1.....	30·00 @ 31·00	—4 mos.
"	Forge.....	26·00 @ 27·00	—4 mos.
Alabama	No. 1.....	30·00 @ 31·00	—4 mos.
Missouri	No. 1.....	31·00 @ 32·00	—4 mos.
"	No. 2.....	29·00 @ 30·00	—4 mos.

HOT BLAST STONE COAL.

Missouri	No. 1..... ₱ ton..	$31·00 @ 32·00	—4 mos.
"	Forge.....	26·00 @ 27·00	—4 mos.
Ohio	No. 1.....	28·00 @ 29·00	—4 mos.
"	Forge.....	26·00 @ 27·00	—4 mos.
Scotch Pig,	No. 1.....	.....	

COLD BLAST CHARCOAL.

Hanging Rock	Car Wheel ₱ tn.	$40·00 @ 50·00	—4 mos.
Missouri	" "	45·00 @ 48·00	—4 mos.
Kentucky	" "	43·00 @ 48·00	—4 mos.
Tennessee	" "	40·00 @ 48·00	—4 mos.
Georgia	" "	40·00 @ 45·00	—4 mos.
Alabama	" "	40·00 @ 45·00	—4 mos.
Machinery and Forge		40·00 @ 45·00	—4 mos
Blooms		75·00 @ 90·00	—4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Nov. 3: Trade still rules depressed and unsatisfactory, and orders only being issued for immediate wants, and we quote the list weak and undersold.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.. } 1 to 4½ wide by 1⅛ to 2 thick }	2·9 to 3·1 cts. per lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive.....	2 9-10 to 3 1-10c. "
Hoop Iron, 1½ wide and upward	4½ to 5c. "
Band Iron, from 1¼ to 4 in. wide	4 to 4½c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick.....	4½ to 5c. "
Norway Nail Rods	7¾ to 8¼c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	16½c. "
Machinery Steel	11½c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs	$5·87½
" Mule Shoes " "	6·87½

Common Horse Nails, from 14c. to 18c. per pound.

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per lb.
	10	9	8	7	6	
Globe Horse Nails..	23	24	25	26	28c.	per lb.

R. R. Spikes.....5½ by 9-16 at 3¾c to 4c. per lb.

Messrs. HOFFMAN, THOMPSON & CO., Iron commission merchants, 23 and 25 South Frederick street, under date of Nov. 3, report the Pig Iron market as follows: The market dull, without precedent, and a downward tendency, with small sales. We quote:

Baltimore Charcoal Pig Iron		$35·00 @ 38·00
Virginia	" "	35·00 @ 37·00
Alabama	" "	32·00 @ 34·00
Anthracite	No. 1	29·00 @ 30·00
"	No. 2	26·00 @ 28·00
"	No. 3	25·00 @ 26·00
White and Mottled		18·00 @ 20·00

LOUISVILLE.

Mr. GEO. H. HULL, under date of Nov. 2, writes us as follows: There is some falling off in the demand, and prices are lower. The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1	F'dry, from Hanging Rock Ores	$30·00 @ 32·00	
" 2	" " " "	27·00 @ 28·00	
" 1	Forge, " " "	25·00 @ 26·00	
" 1	F'dry, from Tennessee Ores	28·00 @ 30·00	
" 2	" " "	26·00 @ 27·00	
" 1	Forge, " " "	25·00 @ 26·00	
" 1	F'dry, from Alabama Ores	28·00 @ 30·00	
" 1	" " Iron Mountain Ores	30·00 @ 33·00	

HOT BLAST STONE COAL.

No. 1	F dry, from Missouri Ores	30·00 @ 32·00	
" 2	" " "	28·00 @ 30·00	
" 1	Forge, " " "	27·00 @ 28·00	

COLD BLAST CHARCOAL.

Car Wheel	from Hanging Rock Ores	45·00 @ 50·00	
"	" Tennessee Ores	43·00 @ 45·00	
"	" Alabama Ores	44·00 @ 46·00	
"	" Georgia Ores	44·00 @ 46·00	
"	" Missouri Ores	43·00 @ 45·00	
"	" Kentucky	43·00 @ 46·00	

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Oct. 18, 1874.—*Metals.*—The European metal markets have undergone little alteration during the week, and steadiness has been the predominant feature. The raising of the discount rate by the Bank of England to 4 per cent., and the hardening tendency in money matters on the Continent, have failed to produce any lasting adverse influence in business circles. Even a further rise of 1 per cent. at London would hardly be felt, but beyond this the strain would, no doubt, prove prejudical at this time of the year. At all events, the warning is a wholesome one to speculators; great inconvenience might ensue, and prevent the perfecting of financial shiftings indispensable to a successful issue of their operations. *Copper.*—There has been a fair amount of briskness in the English market, and it would have carried prices for Chili Bars still further onward but for the establishing of an enhanced discount rate, causing a slight temporary recoil, from which the market righted again soon afterward, and has now recovered the opening figure of the week. Armaments on an unusually extensive scale are going on among us on the Continent, and the amount of Copper used for the manufacture of cartridges alone is vast, in a measure explaining the increase of consumption lately perceptible. Thus a large business has again been done in our own midst, and a healthy tone pervades the market, nearly all descriptions showing an upward tendency. We quote deliverable at Havre, Chili Bars, 220 francs; Common, ditto, 215; Ingots, 230; Tough Cake, 227·50; and pure Corocoro Ore, 215. At Havre there have arrived 11,800 bags Arica Ore, which have brought 213·75 the 100 kilos., pure; prices are on the rise there. First brands, 220; current, ditto, 217·50; and Lota and Urmeneta, 215. At Marseilles the upward tendency of the Copper market is daily gaining in strength on the basis of 220 francs for Refined Ingots. *Tin.*—Early in the week the European Tin markets showed signs of greater animation than had been witnessed for some time past, and at London a fair amount of business was transacted at between £91 and £92, cash, for Straits. The firmness has been kept up there to the close, and prices have advanced even to £92. 10/. In Holland, on the other hand, the metal has relapsed into quietness; yet prices have been fully sustained, and after some dealings had taken place at 56¾ guilders, the week wound up at 57, with purchasers at the latter rate, while Billiton will now bring 53¾, after being dealt in at 53½ previously. The 9000 picul sale at Batavia of the 12 instant averaged 60·30, for which the Dutch parity figures up 55 guilders the 50 kilos. Tin has remained quiet and unaltered here—Banca, deliverable here, 255; Straits, 240, and English, at either Havre or Rouen, 242·50. Marseilles is also quiescent—Straits and Billiton at 245. *Lead*, throughout the week, has been in fair request, and for early delivery remains exceedingly scarce, the price in England ranging between £22. 10/ and £22. 15. Firmness characterizes the European markets generally, and prices are tending steadily upward. Business would be larger but for the light stocks on hand. Lead is quite scarce here, and our smelting establishments have sold all they can produce till the end of the current year, enabling dealers to screw up prices to 58·50 to 59 the 100 kilos. Wholesale prices are 65·50 for French Lead deliverable here, 56·50 for Spanish and English landed at Havre, and 56·25 Belgian and German delivered at Paris. Stocks are pretty much exhausted at Marseilles, from which a circumscribed volume of dealings have resulted, while prices steadily improve. We are informed from there that the owner of the well known Figueros brand mines in Spain was captured by the Carlists while transferring some silver to Carthagena, and came near being shot, but for the timely interference of their leader. As long as these Carlist troubles continue we dare not look for lower prices. *Spelter.*—This metal remains unchanged and firm; the short supply continues. Silesian is in brisk demand at London, where prices have, nevertheless, risen no further. Not much transpires there-in in our own midst, merely for the lack of fresh supplies. We quote Silesian at Havre 60 francs; other good brands there 59, and here 59·50; Marseilles is steady. *Iron.*—The liveliness and firmness in tone of the French Iron markets is fully kept up. Nail Rods and Wrought Iron are in brisk request, and Sheet Iron is improving in value; for Coke Iron 230 to 240 francs continue to be paid; Coke Pig at the Meurthe and Moselle remains well sustained at 85, while common Pig at Longwy is commanding 80 to 82·50, and 72 at Luxembourg. At the North most of the works are busy, and sell their iron at 220 to 225, while Sheet is bringing there between 290 and 295. Here, at Paris, not much change is noticeable, although the general tendency is rather an upward one. Coal prices are firm in France, and the markets are moderately active, and devoid of excitement, nothwithstanding the near approach of winter.

BELGIUM.

(Le Commerce.)

BRUSSELS, Oct. 18, 1874.—*Iron.*—The week just brought to a close has not been a brilliant one, and the prevailing dullness has even resulted in a good deal of weakness. Wrought Iron has slightly declined from the previous quotation of 21 francs, while "affinage" Pig has given way 25 centimes. "Moulage" is sustained. Our Iron Rail makers are in hopes of getting some government orders to enable them to carry their hands through the winter. Steel continues in the ascendant; thus the Angleur works have, we are assured, just closed a contract to furnish the Great Central Belgian Railroad 3000 tons of Bessemer Rails, to be delivered early the coming year. It will be difficult for Iron Rails to hold their ground against Steel ones. While many parties intend erecting new steel works, opinions seem to be greatly at variance as to the best method to be adopted. While a good many are still in favor of the Bessemer process, others seem inclined to introduce either the Martin-Siemens, the Terre-Noire or the Pernot system. Considering the peculiar position in which Belgium is placed, with respect to the raw material and the labor market, we are still adherents to the Bessemer process, to say the truth, the latter two methods are as yet in embryo. A large amount of money is now-a-days necessary for the purpose of erecting and furnishing steel works as they should be in order to prove a success. The works are required to be extensive and to possess all the latest improvements. Belgium is but a limited market, hence we are compelled to compete abroad, and our Iron masters, or many from among them, hesitate ere they transform their works on such a vast and expensive scale. *Coal.*—No raising of prices will be attempted by our companies till early next month; but even then we are afraid they will remain unsuccessful in establishing an enhanced range of prices for a month or two to come, unless in the meantime, Iron industry should pick up mightily. Our Coal market, in fact, still traverses a critical period. Large importations of English Coal are going on uninterruptedly at prices low enough to render competition difficult. Six steamers are to ply between Newcastle and Sutherland and our country for the carrying of Coal to Belgian ports, aside from the arrivals by sailing vessels. The Grand Duchy of Luxemburg, on the other hand, we are losing as a customer, the Ruhr country beginning to monopolize that market.

GERMANY.

(Borsenhalle.)

HAMBURG, Oct. 16, 1874.—*Copper* has been quiet, American Lake at 110 marks, Drontheim at 90, and Swedish at 80. Berlin is steady at 30 to 31 thalers the 50 kilos for English and Australian. *Tin.*—Business in this metal in Germany has been but slack during the week, with a certain weakness in prices, sympathizing, as we proceed, with the Dutch and English markets; at Berlin, however, greater firmness is noticeable, Banca there at 34½ to 34¾ thalers, and English at 33 to 33¼ the 50 kilos. A good demand has prevailed for *Lead*. German and English here are firm at 24 to 24½; Spanish, 25 to 25¾ marks. Berlin is also well sustained at 7¾ to 7⅞ thalers the 50 kilos for Tarnowitz, Hartz and Saxonian. Stettin bears up well at 7¾ to 8 thalers, Spanish. Prices in Holland are on the rise, Stolberg there being worth 13¼ guilders, and other brands 13. Nothing of special interest has occurred in the German *Spelter* market; at Breslau the Polish brand Kramsta has been sold at 7¾ thalers, and Hohenlohe, to arrive, at 7¾. Stettin remains quiet and firm at 8 to 8¼. Berlin ranges all the way from 7¾ to 8 thalers the 50 kilos. Sales here have been confined to 1000 quintals, to arrive by rail, at 23·27½.

HOLLAND.

(Evers & Co.)

ROTTERDAM, Oct. 17, 1874.—*Tin* remains remarkably quiet. Banca, cash, has been done at 56¾; there are buyers now at 57. Billiton, spot, after selling at 53¾, would bring 53¾ guilders the 50 kilos to-day.

CHINA.

(Arnhold, Karberg & Co.)

CANTON, Sept. 11, 1874.—*Lead.*—The low stock of this article has produced a further slight improvement, but the market closes quiet, there being scarcely any consumptive demand at the rates now asked by owners. In *Tin* but few transactions have taken place, and closing prices exhibit a fall of 25c. per picul. *Quicksilver.*—Native dealers have been coming forward more freely, and fairly large settlements were effected at $196 to $197 per picul. The tendency at the close is still in favor of holders, and as supplies on the way are very moderate, a further improvement is likely soon to take place. We quote Lead, $7·45 to $7·70; Tin, $24·50 to $26·50; English Quicksilver, $197 to $198, and California, $25 to $25·50.

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, Sept. 5, 1874.—*Tin.*—Moderate transactions are reported at $24·50 per picul, at which the market closes quietly. Exchange has declined to 4/2⅛ for first-class credits. The Belle of Southesk took for Boston 499 piculs Tin. Tin exports from the Straits to the United States, first eight months of 1874: 31,981 piculs, against 22,967 in 1873, 42,903 in 1872, 34,002 in 1871, 37,565 in 1870, 27,529 in 1869, and 24,519 in 1868.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Oct. 19, 1874.

CONTINENTAL POLITICS

are still in what some of your trans-Atlantic humorists would term a "mixed" condition. Herr—I beg pardon, Prince—Von Bismarck is still gaily engaged in the congenial occupation of weaving a huge net of diplomatic cunning around his prisoner, Count Arnim, and the latter's chances begin to look proportionately "blue." With the obvious intent of injuring the reputation of his captive, Bismarck has caused a rumor to be circulated that the Count has tried to commit suicide. He has also had another search made at the residence of his victim's mother-in-law, at the termination of which a fire—by no means accidental—took place on the premises. In the meantime the whole family and connections of the Count have hurried to Berlin, one of the number being the governor of Alsace-Lorraine. This gentleman is absent without leave, and is said to intend to resign his post. He and other heads of the family are endeavoring to force an interview with the Emperor, and it is supposed that, having an exceedingly strong court party in their favor, they will, to a certain extent, succeed in what they desire to effect. If they, however, suppose that they will in any appreciable degree be able to thwart Bismarck they are fondly mistaken. They lay the flattering unction to their souls too ignorantly. There never was a monarch—not even in the darker ages of the world's history—so completely and thoroughly under the thumb of his minister as is the pious Wilhelm under the guidance, governance and servile serveillance of his astute, unprincipled and utterly unscrupulous Chancellor, Bismarck. In saying this I am not to be supposed to be underrating the immense advantages which have accrued to Prussia from Bismarck's efforts, but I do say that some of those efforts were prompted by hopes of spoilation and not by statesmanship, and that the present French government, in sending out the circular they are now preparing for the various European cabinets, submitting that Germany has now no just cause of quarrel with France, will have the general support of public opinion in this country, at least. Unless politics settle down, we may look for a very dull winter's trade.

A LITTLE MORE BELGIAN COMPETITION.

The London *Iron Trade Register* says a good deal of fuss has been made about a small importation of Belgian iron into Staffordshire, but the fact is of very little value. The statement thus alluded to runs as under:

"There has just been delivered in South Staffordshire, for use in the midst of the iron works there, a consignment of Belgian iron, which is a splendid specimen of the capabilities of the iron mills of Belgium. The consignment is made up of four flitch plates of the following dimensions: Length, 25 ft. 5 in.; breadth, 18 in.; thickness, ¾ in., and weight, 15 cwt. The plates are lying at the Highfield Engineering and Iron Foundry Works, near Bilston, of Messrs. Perry & Sons, where they will be used in conjunction with baulks of timber to carry the roof of a new machine shop. It was sought to obtain the iron in this country, but the effort was unsuccessful. Although some 20 English and Scotch firms were applied to, yet one only quoted a price. In getting the order accepted in Belgium, on the contrary, no difficulty whatever was experienced. The contrast, too, was as great in the matter of prices. While the single English firm required £19. 4/ per ton for the plates delivered, the Belgians have made and delivered the iron at £13. 2/9 per ton, or £24. 5/ upon the whole order in favor of the Belgian quotations. The iron is being freely inspected by neighboring iron masters, among whom it is occasioning no little interest. Its quality is not of the best, nor has the work to which it has been subjected in the earlier processes been as thorough as is usually given to iron by the English plate maker; but it is good enough for the use to which it is to be applied, and the price at which it has been bought is wonderfully low. To say the least, therefore, the transaction is admonitory. It is not a little singular that while Belgium is sending plates into South Staffordshire, the rolls with which they are turned out have, not improbably, been made in South Staffordshire, and it may be by Messrs. Perry, who themselves make largely for Belgium."

OUR RAILWAY IRON EXPORTS.

In my last I gave a series of tabular statements, detailing the exports for September. I now annex statistics giving the details of the tonnage of railroad iron exported during the nine months, the first column showing the total for the three quarters of last year, and the second column for the nine months of 1874, terminating Sept. 30th:

To	Tons.	Tons.
Russia	125,368	120,251
Sweden and Norway	35,316	62,200
Germany	34,151	6,766
Holland	15,729	17,329
Belgium	23,237	14,379
France	2,254	1,931
Spain and Canaries	8,847	18,227
Italy	22,118	11,354
Austrian Territories	816	2
Egypt	6,237	11,148
United States	151,972	85,454
Spanish West India Islands	4,446	1,954
Brazil	11,665	17,153
Peru	7,732	7,181
Chili	3,855	13,859
British North America	49,313	55,746
British India	11,939	31,395
Australia	17,219	61,487
Other countries	61,382	100,179
Total	591,596	637,995

It is thus seen that our best customers this year have been Russia, Sweden, Norway, Holland, Spain, Egypt, Brazil, Chili, British North America, British India and very notably Australia.

THE SCOTCH PIG IRON MARKET

has been much weaker during the past week, warrants having drooped from 86/ to about 83/ per ton, and figures for makers' brands having been reduced by fully 5/ per ton. There is an increased output in many directions from the 117 furnaces now in blast, so that, despite the smallness of the quantity in store (17,295 tons), quotations may very possibly come down still lower. Writing on October 16th, Messrs. James Watson & Co. (Glasgow) say:

"The market for Scotch pig iron opened this week at 85/, receded on Tuesday to 83/3, and has since fluctuated between the latter figure and 84/6, closing this afternoon buyers at 83/6, cash. The demand for home and foreign consumption has not been sustained, and makers have reduced their quotations 5/ to 7/6 per ton for special brands. Shipments last week were 10,307 tons, against 15,492 tons in the corresponding week of 1873. We quote.

		No. 1.	No. 3.
G. M. B., at Glasgow		90/	81/
Gartsherrie,	"	106/	83/6
Coltness,	"	110/	83/6
Summerlee,	"	100/	82/6
Langloan,	"	106/	83/
Carnbroe,	"	96/6	82/
Clyde,	"	..	....
Calder, at Port Dundas		108/	83/
Glengarnock, at Ardrossan		99/	83/6
Eglinton,	"	82/6	80/6
Dalmellington,	"	90/	81/
Shotts, at Leith		107/	84/6
Kinneil, at Bo'ness		95/	80/6

Messrs. Colvin & Co. (Glasgow, Oct. 20th) report:

"The warrant market continued pretty steady during the latter part of last week, the price fluctuating betwixt 84/ and 83/, closing on Friday at 83/6. Yesterday the opening price was 83/, and it receded to 82/6. To-day there was more desire shown to sell, and business was done from 82/6 to 81/6, closing afterward with a firmer tone, 82/6 paid. The general demand and the exports continue on a moderate scale, and a considerable reduction has taken place in the high prices which lately ruled for special brands. Our quotations are:

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	87/6	79/
Gartsherrie, "	102/6	83/
Coltness, "	105/	83/6
Summerlee, "	100/	81/
Carnbroe, "	94/	81/
Monkland, "	90/	80/
Clyde, "	90/	80/
Govan, at Broomielaw	90/	80/
Langloan, at Port Dundas	105/	82/
Calder, "	112/6	84/
Glengarnock, at Ardrossan	96/	81/
Eglinton, "	87/	78/
Dalmellington, "	87/	78/
Carron, at Grangemouth, selected.	105/	....
Shotts, at Leith	105/	85/
Kinneil, at Bo'ness	95/	80/
Bar Iron		£10
Nail Rods		10

SHIPMENTS.

	Tons.
Week ending 18th October, 1873	12,689
" " 17th October, 1874	10,140
Decrease	2,549
Total decrease since 25th December, 1873	153,731

FRENCH IRON STATISTICS.

I have come across the following paragraph, under the heading of "Scotch Iron Trade." I am at all times open to a joke, or even a moderately vivacious *jeu d'esprit*, but I own to being at a loss to know why Scotland should take the credit of what properly belongs to *la belle France*. Goodness knows, Scotland has enough to answer for in the way of credit taking. Here is the paragraph:

"The last bulletin of the committee of French iron masters contains some interesting statistical information illustrating the production of pig and finished iron in France during the first half of this year, as compared with the corresponding period of 1873. The aggregate quantity of pig iron made during the first half of 1874 was 707,755 tons, against 60,668 tons in the corresponding period of 1873. The total quantity of iron manufactured in the first half of 1874 was 15,856 tons, against 464,410 tons in the same period of 1873. The total quantity of steel produced was 105,996 tons in the first half of 1874, against 83,018 tons in the corresponding period of 1873."

EXPORTS OF COAL, IRON AND STEEL IN 1873.

It is quite impossible to explain why it should be so, but it is not the less a fact that we never get statistics from our government Statistical Department until they are completely out of date, and, therefore, of no practical use. There has just been issued an official document showing the British exports for 1873 as compared with those of 1872, compiled by the Commissioners of Customs! Now I would ask any business man on either side of the Atlantic, if information relating to so remote a period as 1873 is of any earthly use to him, or if he can point out any item which has not been reported fully a year since, in the columns of the ordinary newspaper press? I don't think he could reply affirmatively in either instance. However, as I have the figures, they shall be quoted for the benefit of your readers, as well as to place on record a modern instance of the altogether unparalleled and persevering manner in which British officialism contrives how not to do it! They read thus:

To the United States there was a decrease of £3,697,000 in our export of iron and steel (except cast or wrought), and of £154,000 in hardware and cutlery, but a slight increase in cast or wrought iron. To Germany there was an increase in the value of the export of iron and machinery. There was an increase in the export of iron and machinery to Japan, and a very slight increase to Australia; the total for the latter being 131,581 tons. Of wrought and unwrought iron sent to New Zealand we find that for 1873, as compared with 1872, there was an increase of 62 per cent. in the quantity shipped, the shipments being 35,790 tons, and 22,150 tons respectively. The exports to India include 80,587 tons of iron manufactures, and 540,706 tons of coal. To Canada there was a decrease in value of £844,000 in iron, and £50,000 in hardware and cutlery. The high price of coals in 1873 appears to have limited, to a certain extent, their exportation. The quantity fell to 12,617,566 tons, a decrease of 4·4 per cent. The average declared value of the coal exported, which was below 10/ per ton in 1871, and below 16/ in 1872, rose to 20/11 in 1873. Germany took less by about 450,000 tons. The value of hardware and cutlery exported was about £5,000,000 in both 1873 and 1872; in 1871 it was but £4,000,000. There was a decline in 1873 in the total quantity of the exports of iron and steel manufactures of all kinds of 424,949 tons, or 12·6 per cent., while the value increased in the same period about five per cent., proving that the troubles which affected the iron industry in 1873 brought about the expected results in diminished exportations and higher prices for the goods. The quantity exported in 1873 was 2,957,813 tons. The falling off amounted to 189,078 tons in pig iron; 160,406 tons in railroad iron; 47,182 tons in old iron for remanufaeture; 26,755 tons in bar, angle, bolt, and rod. There was an increase of 12,393 tons in iron, cast or wrought, and 2555 tons in tin plates. The export of iron manufactures of all kinds from this country to the United States in 1873 fell to 492,762 tons, a decrease of no less than 49·5 per cent.; to Germany a decrease of 9·8 per cent.; to British North America of 43·2 per cent.; and Peru of 66·1 per cent. Among the few countries in which an increase is observable are—Russia of 60·0 per cent., Sweden and Norway at 111 per cent., and Italy of 46·5 per cent.

The value of machinery and millwork exported increased to £10,019,929, or 22·2 per cent. In conclusion, the commissioners state that on a review of the whole of the exports of the United Kingdom for the year, they see no reason in the small decrease in their value for serious anxiety in the future. The advance in the price of coal and of iron, and the diminished amount of labor bestowed on our manufactures by portions of the population, might have been expected to conduce to such a result in a still greater degree. Should such diminution of labor be arrested by an agreement as to their respective interests between capitalists and workmen—an event to be earnestly hoped for by every well wisher to the wealth and prosperity of his country—we may expect to find in future years the same rate of increase in the value of the exports as we have experienced in the past.

TOTAL BRITISH IMPORTS AND EXPORTS.

The total of British imports and exports, comparing 1873 with 1872, is given by the commissioners as follows:

IMPORTS.

	1872.	1873.
From Foreign Countries	£275,320,771	£290,277,250
From British Possessions	79,372,853	81,010,122
Gold and Silver Bullion, &c.	29,608,012	33,599,231
Total	£384,301,636	£404,886,603

EXPORTS.

British and Irish:	1872.	1873.
To Foreign Countries	£195,701,350	£188,830,132
To British Possessions	60,555,997	66,328,471
Foreign and Colonial:		
To Foreign Countries	53,278,266	51,020,926
To British Possessions	5,053,221	4,819,236
Gold and Silver Bullion	30,335,861	28,899,295
Total	£344,924,695	£339,904,050

TRANSHIPMENTS.

	1872.	1873.
Total Declared Value of Articles	£13,896,760	£13,764,420
Total Import, Export, and Transhipment Trade	£743,123,091	£758,555,053

TRADES OF SHEFFIELD.

The course of business in this town and district does not just now vary to any great extent, the prevailing state of things being a quiet one. Raw materials are fairly well sustained in value; the demand for ordinary and hematite ores being steadily good, although not, in some instances, very large. Messrs. Newton, Chambers & Company, of the Thorncliffe Iron Works, who have recently erected two blast furnaces of the most modern construction, are using a considerable tonnage of North Lincolnshire and Northamptonshire ores, and have made effective arrangements for obtaining a sufficient supply of limestone from the Peak Forest district for their use. Similar ores are in use at the furnaces of the Parkgate Iron Company, William Cooke & Company, and other concerns in this neighborhood. At the Atlas Works new blast furnaces, I believe, British hematites mixed with ores from Elba or Algiers are being made use of pending the arrival of a full supply from the Spanish mines of the company.

In fulfillment of what I promised last week, I may now state that Sir John Brown, Mr. Mark Firth and Mr. B. P. Broomhead, of Sheffield, together with Mr. Wood, engineer, of London, have just returned from a visit to the mining works at and near Bilbao—a visit attended with some risk to themselves, taking into consideration the existing state of things in that part of Spain. They left London on September 20th, traveled through France as far as fashionable Biarritz, and sailed from a small port in the vicinity to Portugalete, which is, as everybody knows, at the mouth of the river Nervoin, close to the port of Bilbao. The Bilbao Iron Company, it may be said, have already spent about £400,000 in the construction of a landing stage, and a line of railway about fourteen miles in length. This short length of line has been made literally along the face of the mountains, and as a piece of engineering work takes a very high rank, even amongst lines of that class. There is not one viaduct. Owing to the difficulty experienced in obtaining a sufficient number of workmen, the works have not made such progress as they otherwise would have done; but it is still anticipated that by the end of this year, or early in 1875, the Galdames ore mountain will be reached. This great deposit is so well known that I need not describe it here; but it may be mentioned that its ore yields at least 55 per cent. of pure iron of the very best hematite quality. Shipments will in all probability be commenced on a commercial scale in the course of a few months, to the very great benefit of one or two of the leading Sheffield firms. Further details of this interesting iron district will shortly be to hand, the Sheffield *Daily Telegraph* having dispatched an able correspondent to Spain for the purpose of specially describing the place.

Pig iron is, if anything, a little easier, in sympathy with the drop in prices which has taken place in Staffordshire, Shropshire, Worcestershire, and other iron districts. Cleveland No. 3 pig is held at about 65/., other foundry descriptions being in proportion. Millom-Bessemer, No. 1, is 95/; No. 2, 92·6; and No. 3, 90/; ordinary hematite, No. 3, being 90/; Nos. 4 and 5, 87/6; M and W, 105/ per ton. Maryport and some other figures are a shade less than these. Thus Maryport hematite, Nos. 1, 2 and 3, are 95/; No. 5, M and W, 90/; Bessemer, No. 1, £5; No. 2, £4. 17/6; and No. 3, £4. 15/ per ton at the works. Large lots can, however, be had delivered at about these rates.

In merchant iron there is only a moderate business doing at the prices lately quoted in your columns. I do not hear of any further fall in best or ordinary Yorkshire iron, the former, as well as certain Derbyshire productions, being in tolerably extensive demand for special purposes. Some of the principal firms are doing an improved business in cast steel, an improvement owing, I am informed, to the receipt of several American orders of considerable proportion. There is a little better inquiry for crucible and Siemens' steel, as well as for cast steel of a quality suited for being worked up into the cutting parts of agricultural and other machinery, machine tools, edge tools, saws, as well as for finer purposes. Rod steel meets with a moderately good sale for the spindles, &c., appertaining to cotton spinning machinery.

Some classes of tools meet with a very encouraging call. Australia, as well as India, is taking good consignments of edge tools for general, railway and special purposes, beside which there is a steady inquiry for steel hammers, wood working and other kinds of machinery. Joiners' tools continue to be in moderately brisk request.

As a confirmation of statements which have already appeared as to the closeness of Belgian competition with British iron masters, it may be mentioned that a contractor who has taken the contract for erecting some large drapery premises at Sheffield has found it to be to his advantage to use Belgian girders, joists, &c. The total saving by so doing out of about £5000 worth of iron work will amount to not less than £1000, Belgian prices being £18. 10/ per ton as against the £23. 10/ of the English makers, who were requested to send in quotations; these girders, etc., are, of course, wrought iron. In cast iron there is very little difference in the prices of the two descriptions. A brief statement of this fact has previously appeared in your columns.

The coal trade is in a moderately healthy condition so far as house coal is concerned. A considerable tonnage is being sent to London by rail, and efforts are being made to push its sale, as well as that of steam coal, in Manchester. Slack and small engine fuel is supplied in excess of the demand, and consequently prices are somewhat easier for that class of fuel.

The leading Sheffield daily paper has been publishing copious extracts from a voluminous report by the British consuls in the United States on your iron and steel industries. Presuming that they contain no facts of which you are not already fully informed, I shall not devote any part of my space to quoting them. I may, nevertheless, remark that the consul gives an opinion that "it seems to be the general opinion that the English markets in the United States for rails and other irons will gradually diminish; that iron rails will soon entirely cease to come in, and that steel rails will lessen from year to year in quantity." He also thinks that the Shenandoah and other similar districts in Virginia, North Carolina, Central Alabama, Southern Illinois and Missouri may possibly export iron in large quantities. Descriptions are also given of several of your principal iron and steel works.

Resuming my report of the Sheffield trades, I may again say that there is very little change in cutlery. Common table and spring cutlery does not sell at all freely, and such transactions as are taking place are being effected at prices leaving the seller the merest shadow of profit. Best ivory table knives are generally in moderately good request, and the present time is no exception to the general rule. Rodgers' razors are being made and sold in tolerably substantial lots, there being a good call for "military" and some few superior descriptions. Two or three other houses are also doing a respectable stroke of business in these best goods.

TRADES OF BIRMINGHAM AND SOUTH STAFFORDSHIRE.

In dealing with the hardware industries of the town so fondly called "Old Brum," by those to the manor born, I think I cannot do better this week than quote the remarks of the local *Post* there anent. That paper says: "Merchants give a favorable account of the state of foreign trade. The Levant trade continues quiet, and the prospects of a revival are so unsatisfactory that most of our leading merchants have withdrawn from that quarter; indeed, it is not too much to say that little or nothing is now being done with Turkey direct. Business is much better in Egypt, and favorable accounts which have been received of late tend to make prospects more favorable; the great drawback, however, to business in this quarter is the long credit which has of necessity to be given to customers, who in turn can never reckon upon being paid for goods with the slightest attempt at punctuality. With Russia the season has now drawn to an end, through

the navigation having about closed; but, on the whole, the business of the present year has been somewhat below the average. The prospects of business for next season are, however, good. As regards the Spanish Indies, trade, which is exceedingly good, has been further developed by the favorable rates of exchange. Before the wonderful resources of these islands can be fully developed the administration of affairs will require to be strictly overhauled. Much of this is due to the laxity of the government, which has of late been excusably unable to cope with those irregularities which a want of close supervision invariably fosters. There is no change to report as to the home trade, which continues to be satisfactory. The recent drop of the price in iron has had but little effect on factors, who in most cases had been in a position to discount the pending fall for the benefit of their customers.

Affairs are settling down for a steady winter trade, and on all sides one hears satisfactory accounts from manufacturers. Here and there a few isolated cases of dullness are reported, but these are owing to exceptional causes, and in more than one instance can be ascribed to alteration in foreign tariffs, by which some branches of foreign trade have been crippled. In the general prosperity electro-plate manufacturers fully participate, more especially during the present season, which, as the one preceding Christmas, is generally regarded as the busiest period in the business. In the hope that the price of nickel would decline, manufacturers have evinced some disposition to limit their orders for that metal simply to meet current requirements. We find in this, however, that there is no prospect, for some time to come at least, of any reduction. The leading firms are fully engaged on orders, and even comparatively unknown makers experience no difficulty in getting orders. Wrought iron workers are very busy, the derangement of business of one or two firms in the town having had the effect of largely increasing the demand for several goods on other manufacturers. The old firm of Thomas Whitfield, iron plate workers, which of late has been unsuccessfully carried on by Mr. Adams, has now been acquired by Messrs. Hopkins & Son, of Granville street, who will carry on the business in conjunction with their present wrought tin plate business. Mediæval metal workers are closely occupied on orders. In this description of wrought iron work there does not appear to be so much activity as in the brass work, which is more strictly localized. Manufacturers of stained glass windows, who are somewhat in sympathy with ecclesiastical metal workers, are simply hampered with orders. To one or two leading houses this state of affairs is not unusual; but even second-rate manufacturers find no lack of orders, for the existence of which the rage for reckless church restoration must be held responsible."

I notice that there have been the following alterations in hardware prices during the week: A reduction in best iron wire of 4d. per bundle; annealed drawn fencing wire, 10/ per ton; rolled galvanized fencing wire, 5/ lower; fencing staples, 6d. less; spring wire, 4d. per bundle lower; telegraphic wire, 10/ per ton down; galvanized wire (improved), 4d. per bundle, and tinned iron wire, bottling and weaving wire, 1d. per dozen lbs. lower. Prepared bright and galvanized drawn fencing wires are unchanged, while there is an advance of 10/ per ton on rolled fencing wire. Paris points are easier, as also are heavy hammers, vices, anvils, common screws, sash chain, iron and zinc chain, sofa springs and some other small ware. Brass and copper wire are reduced ¼d. per lb. only, not ½d., as stated last week. The iron trade does not alter materially, but some kinds of finished iron, notably sheets, are in brisk request. Rods, also, and bars are now much sought after, and there are some good commissions for gas tube, strips and hoops.

SOUTH WALES.

The iron trade of this very important district is still comparatively dull, and in no one case do we hear of anything bordering upon activity. At Cyrfarthfa there is still only one blast furnace at work; at the Landore Steel Works the men are yet out on strike; at Ebbw Vale the puddlers, &c., are dissatisfied and threaten trouble, but at Dowlais, Tredegar, Nantyglo, Treforest, Blania and Plymouth prospects look a little brighter, and there appears to be some likelihood of a little more business. The export coal trade is fairly brisk, but there being a greatly increased output a drop in prices is expected to take place next week.

THE METAL MARKETS.

The metal markets appear sound and firm all round. Copper has changed hands in limited quantities at full rates. Tin has been more active, but there is only a moderate business doing in tin plates. The *Mining Journal* (Oct. 17th) thus remarks: *Copper.*—The market opened firm at the beginning of the week. Ore at Swansea realized 16/3 per unit, Chili bars, g. o. b., changed hands at £83; Burra, £90. 10/; Wallaroo, £92. 10/, cash. Later on regulus fetched 16/9 per unit in Liverpool. The demand for English varieties of copper is limited. Tough is obtainable at £89 to £90; best selected, £91 to £92; sheets, 4x4, at £93; yellow metal sheets and sheathing, 8d. to 8¼d. per lb. Toward the close of the week another parcel of ore was sold at Swansea at previous prices, and Chili bars are now obtainable at about the same rates as current throughout the week. The stock of fine copper in Liverpool and Swansea is estimated at about 14,200 tons, against 15,500 tons on the 30th ult., 21,800 tons on October 15, 1873, and 21,000 and 17,700 tons on the same date of the two previous years. The consumptive demand for Chili bars is good, and the market sound. *Lead.*—This metal throughout the week has been in good demand, and very scarce for early delivery; good soft English pig is now quoted £22. 10/; and LB, £22. 12/6, and £22 15/ per ton. *Zinc.*—130 tons have realized £28. 12/6 to £29. *Spelter* remains unaltered; the market firm, owing mainly to short supplies. *Quicksilver.*—Business is reported at £23. 17/6 per bottle. *Tin.*—At the commencement of the week the market showed signs of greater animation than for some time past, and a fair business was done in Straits at £91 to £92, cash. Australian realized £89 to £90; English ingots, £96 to £97. The firmness with which the market opened has been maintained throughout the week, and prices show an upward tendency, Straits being quoted at £92. 10/ to £93; Australian, £91, and English ingots, £98. *Tin Plates.*—Market is quiet, but firm. There are some houses well supplied with orders, and those that are not are indisposed for the present to submit to any important concession in price.

Messrs. French & Smith's circular: *Tin* is active, and price has improved all round. The quantity of Australian arriving, however, checks the advance which would otherwise be inevitable. In Holland the market is excited, and the price of Banca is firm at 57, and Billiton, 54¼. Banca, £101 per ton; Billiton, £95; Straits, fine, £92. 10/ to £93; Straits afloat or forward, £92 to £92. 10/; Australian ingot, £90 10/ to £91; English, refined, £99 to 100; ditto, common bars, in barrels, £98; ditto, blocks and ingots, £97 per ton. *Tin Plates.*—Charcoal, I. C., per box, 36/ to 40/; Coke, I. C., per box, 27/ to 35/. *Lead* is very firm and scarce.

Messrs. Warner, Walduck & Co.'s prices current: *Bar Iron.*—Staffordshire, "Champion" bars, £10. 10/; hoops, £11; sheets, £13; strip, £10 (at works); charcoal bars, £21; hoops, £22; sheets, £24; strip, £24 (at works). North of England bars, £9. Tank plates, £11 (at works). Bolts and nuts from £17. 10/ per ton. Spikes from £12. 10/ per ton. Rivets from £13 per ton. General castings from £7 per ton. *Tin Plates.*—"Hendy" charcoal, extra fine quality, 38/ per box; "Gower" charcoal, 35/ per box; "Rhos" coke, 31/ per box; common coke, from 27/6 per box. Rolled brass, 9½d. per lb.; brass tubes, 11¾d. per lb; copper tubes, 1/ per lb.; brass wire, 9¾d. per lb.; copper wire, 12¼d. per lb.

Messrs. Henry Rogers, Sons & Co.'s London price current: *Copper.*—There was an active market throughout the whole of September, and prices rose £5 per ton. The reduction in the stock of copper on the 1st of October, as compared with the 1st of September (taking the basis of calculation adopted previously to the opening of the direct cable) is 2800 tons. The charters to the 15th of September, as compared with the corresponding period last year, have increased 3900 tons, whilst the shipments advised by mail (say, to August 14th) are 4405 tons beyond those made to August 14, 1873. The exports of copper from England are far in excess of any period during the past five years, but the imports begin to approach the exceptional year of '72, during which prices reached such an unprecedented range. Stocks are very low, there is no doubt, considering the trade that appears to be doing, but the tendency of communication by cable with the West Coast will, of necessity, lead to smaller stocks being held this side, and their increase or decrease may, therefore, no longer be the index of price. At the same time, our exports prove that the average of prices throughout the past twelve months have been considered moderate by consumers all over the world. In general goods of which copper forms a component part, the trade has not yet improved, wages and coal tending to keep up the price of these beyond where they stood at when copper previously averaged present prices. A steadier market would soon prevail on a revival of a demand for copper for general purposes. Unfortunately, also, mixed metals, such as brass, yellow metal, wire, engine tubes, &c., are much depressed, owing to the break up of the several associations in these trades, and the renewal of very severe competition; but, in spite of these drawbacks, copper has advanced, and its increased value is not apparently considered excessive. The imports of copper into England for the first eight months of the following years were: 1870, 45,114 tons; 1871, 43,652 tons; 1872, 56,593 tons; 1873, 46,840 tons; 1874, 51,504 tons. The exports for the same periods were: 1870, 37,044 tons; 1871, 33,875 tons; 1872, 28,467 tons; 1873, 36,616 tons; 1874, 39,340 tons. Sheet and sheathing, f.o.b., £95 to £97 per ton; flat bottoms, £98; tough cake and ingot, £90 to £92; flat tiles for India, about 14 lb., £89; best selected ingot, £92 to £93; Burra Burra and Wallaroo (in warehouse), £90 to £91. 10/; Chili slab in Liverpool for produce, 96 per cent. f.o.b., £83 to £86 per ton. Yellow metal sheathing, P. H. Muntz & Co.'s f.o.b., 8½d. per lb.; ditto brazier, P. H. Muntz & Co. (soft, specially made for India), 8¼d.

Latest Liverpool metal and iron quotations are:

Iron: f. o. b. in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	9	7	6 to	9	10	0
Merchant bar, in Wales	9	0	0 to	9	2	6
Staffordshire	10	5	0 to	14	10	0
Hoop	11	10	0 to	12	10	0
Sheet	13	0	0 to	14	0	0
Nail rod	10	5	0 to	10	15	0
Bar, best crown	10	5	0 to	10	10	0
Boiler plates	12	5	0 to	13	5	0

Tin Plates: f. o. b. in Liverpool, per box.

	£	s.	d.	£	s.	d.
Charcoal, I. C.	1	16	0 to	1	19	0
Coke, I. C.	1	7	6 to	1	10	0

Copper: Delivered in Liverpool, per ton.

Bolt and Sheathing	£96
Tile	90
Tough cake	88
Best selected	90

LATEST LONDON METAL MARKET.

Copper.—No business reported, and prices unchanged. *Tin* dull and lower. Straits nominally £92. 10/; Australian sold at £90 to £90. 10/. *Spelter* unaltered. *Lead* firm at £22. 15/.

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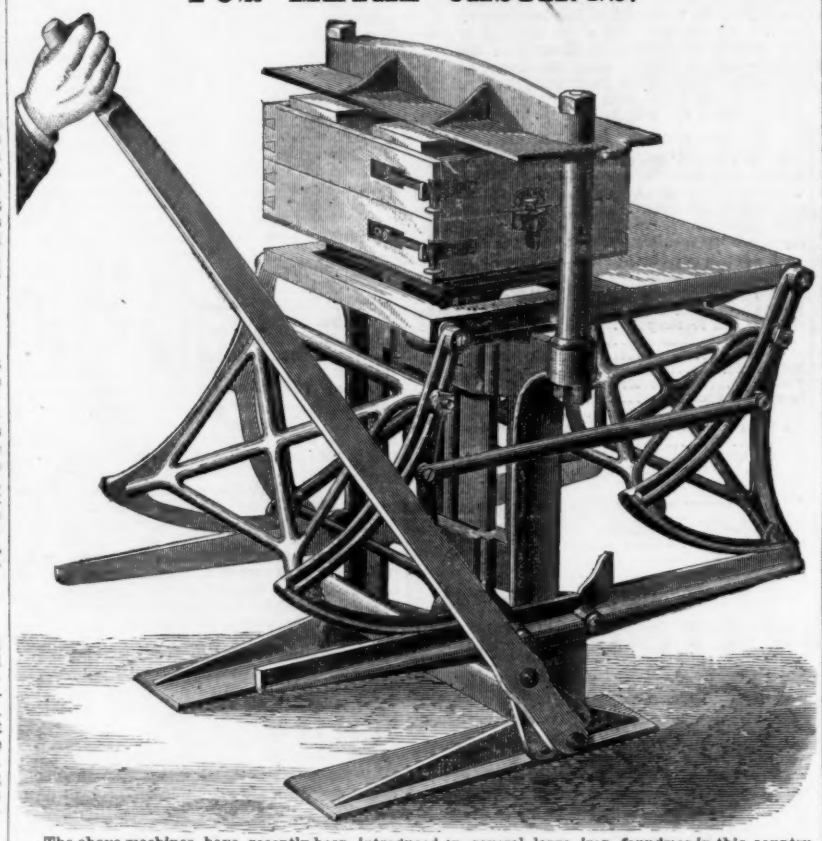

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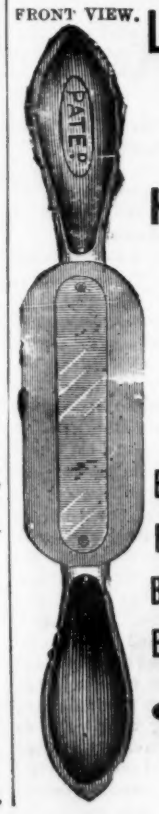

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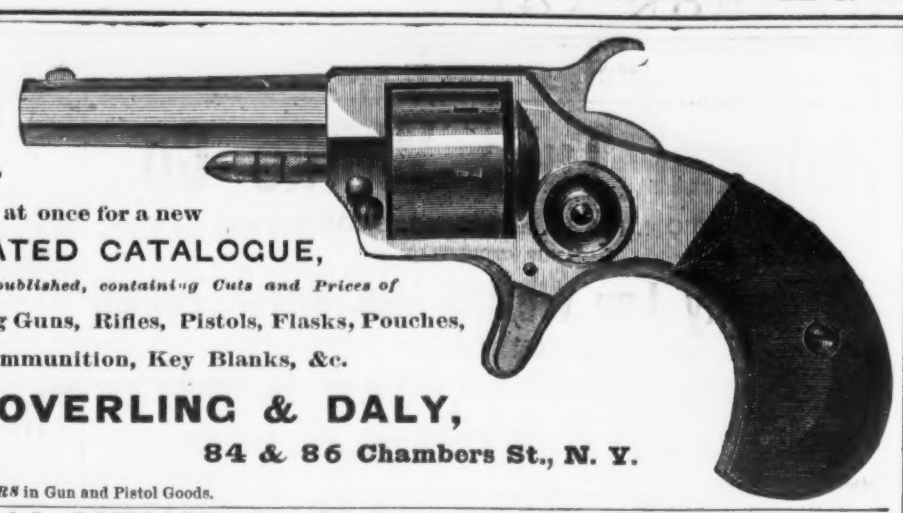

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This Brace has a Lignumvitæ Revolving Handle, Sweep, Malleable Iron Cast Steel Jaws, It is beautifully finished, and in MOST PERFECT BRACE In places where there is not room to revolve the sweep, a will drive the bit in or out, They cost only 50 cents more without the Ratchet attachment, and will surely come

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No. 78 Beekman St.,

NEW YORK.

Lignumvitæ Head, Rosedale, Wrought Iron Nut & Socket, with Rachet Wheel. in all respects the IN MARKET. slight back and forth motion than the same style of brace into general use. For Sale by all Hardware Dealers.

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This is the most powerful Cutter in use, and just what is needed by all retail iron dealers. Also by shipbuilders, manufacturers, and all others having iron to cut. It will cut iron twice as large as any other machine of the same cost.

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Our Glass Cutters are made with a handle like a Glaziers Diamond, but, instead of the diamond point, they have a small hardened steel revolving wheel, the sharp edge of which cuts nearly as well as a diamond. They are durable, and will give entire satisfaction.

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An infinite number of useful and ornamental articles can be made. It will pay for itself every day when in use. The frame is 5x12 in., and made of red cherry wood, beautifully polished.

For sale at all Hardware stores.

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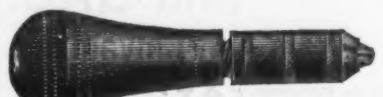

In addition to the 20 Cast Steel Tools inclosed in this handle, it will hold anything from an 8 inch Mill File to a Cambric Needle. It is by far the best Tool Holder in use, and will also answer nearly all the purposes of a Hand Vise. The wood is lignumvitæ and hard maple, the ferrule, malleable iron, and the jaws cast steel. Most hardware dealers keep them, or will send to us for them.

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Manufacture **Barber's Bit Braces, Miller's Falls Vises, Little Giant Iron Cutters, Adjustable Chuck Breast Drills, Family Tool Chests, Pratt's Boiler Tube Scrapers, Patent Angular and Ratchet Drilling Machines, Langdon Mitre Boxes.**

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MANUFACTURED BY

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These **Vises** are only manufactured at the **HOWARD IRON WORKS**, at **Buffalo, N. Y.** and are so stamped. The improvements in these **Vises** which are patented are valuable, and parties who claim to manufacture, and are offering a **Vise** representing it to be the same as the **HOWARD VISE**, are deceiving the Trade.

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WARRANTED.

The New Double Screw Parallel "Leg" Vise.

We are now ready to furnish, as the result of more than thirty years' experience, our latest style of Vise—the best yet made. It is **Stronger** than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip." The jaws are of convenient shape for the workman to get near his work equally well for filing or chipping, instead of the heavy, clumsily formed jaws of the cast iron Single Screw Vises of the common "parallel" type, and which depending upon slides alone for preserving parallelism, can never be screwed up very hard without "jamming" on the slides or breaking.

Our New Vise combines all the advantages of the "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and at the same time greatly superior to it; is always perfectly parallel at all points of opening, and never gets out of line. Embodying the same general principle as the well known Chain Vise, so long made by us, we have by new, scientific proportioning of all the parts, and with our recently improved metals for their manufacture, obtained so perfect a tool, that we now *warrant* these Vises for *three years*, from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in *solid cut thread* boxes.

The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw through the connecting chain which regulates it.

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No. 1,	Jaws	3¼	in. x ¾	in.	Screws	⅝	in. diameter.	Lever	9 in. long,	Opens 4¼ in. $8 00
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" 3,	"	5¾	in. x 1⅛	in.	"	1¼	in.	"	16 in. "	" 6½ in. 17 00
" 4,	"	6¾	in. x 1¾	in.	"	1⅜	in.	"	19 in. "	" 7¾ in. 22 00
" 5,	"	7	in. x 1⅝	in.	"	1¾	in.	"	24 in. "	" 9 in 30 00
" 6,	"	8	in. x 1⅞	in.	"	1¾	in.	"	26 in. "	" 10 in 34 00

All sizes of these Vises furnished with Swivel Attachment, at an additional cost of $1 to $3.

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WARRANTED BEST IN USE.

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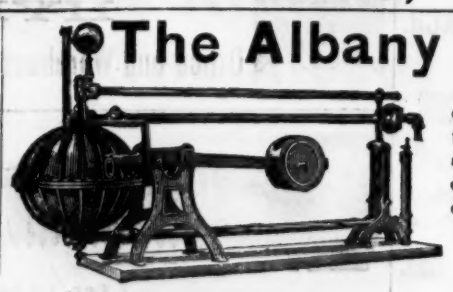

This Trap automatically drains the water of condensation from *Heating Coils*, and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

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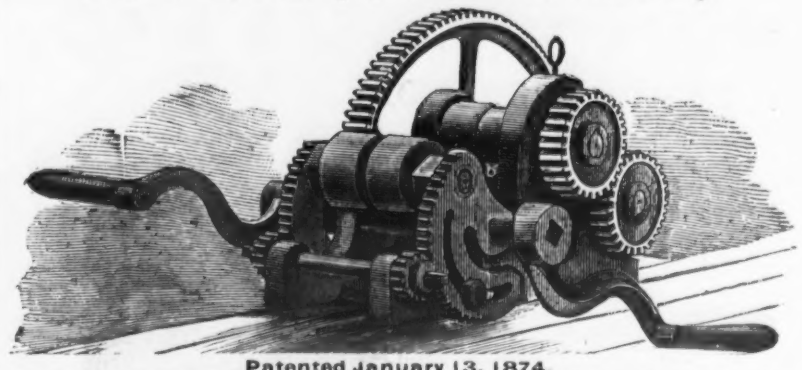

Patented January 13, 1874.

This Machine is destined to supersede all Tire Benders now in use, especially for heavy work. The middle roller can be readily removed and readjusted, thus allowing Tires to be withdrawn without difficulty after being bent. Fifth Wheels and Tires never slip while being bent in this Machine. One man can bend a Tire 3x1 without difficulty.

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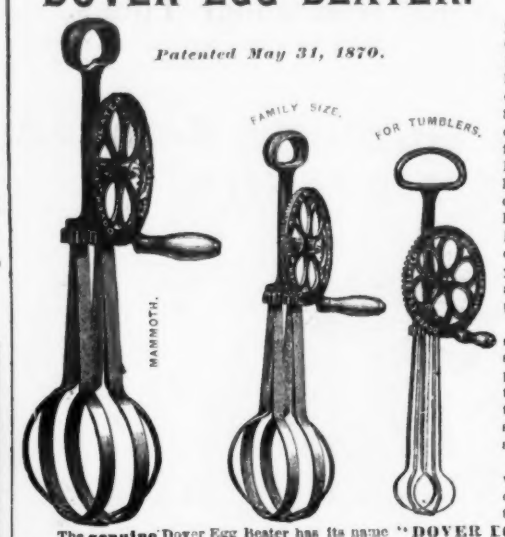
DOVER EGG BEATER.

Patented May 31, 1870.



The **genuine** Dover Egg Beater has its name "**DOVER EGG BEATER**" legibly cast on the face of the large wheel.

Special Notice to the trade.

The long contested suit (more than two years' in court) Monroe vs. Dover Stamping Co., which was brought to **destroy** the **DOVER EGG BEATER PATENT**, has been **decided in our favor** (see decision of the Circuit Court of the United States, Sept. 3, 1874, Shepley, judge), thus ending disastrously to our opponents, and fully vindicating the integrity of the Dover Egg Beater Patent, which we shall maintain legally against all who infringe the same or either of our seven other patents on Egg Beaters. **Imitations** of our **Dover Egg Beaters** or either of the Egg Beaters covered by our Patents, **manufactured beyond the limits of the United States, and brought here for sale, will be promptly and severely dealt with.**

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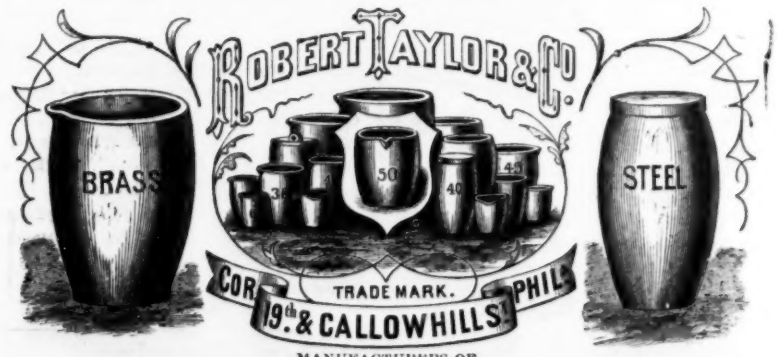

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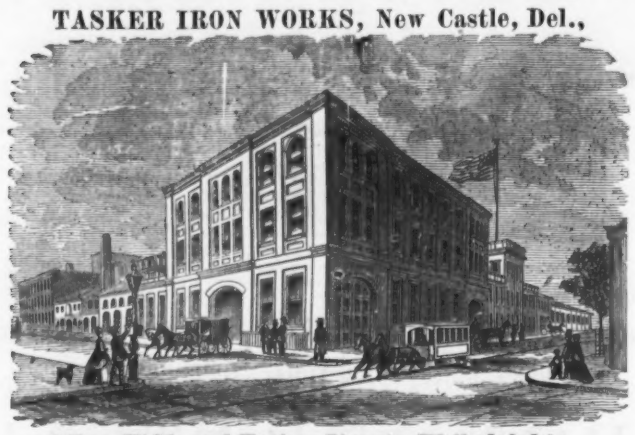

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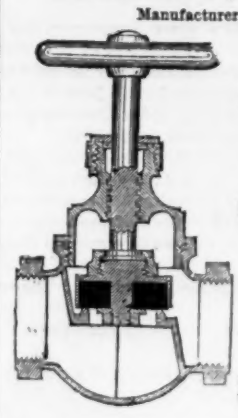

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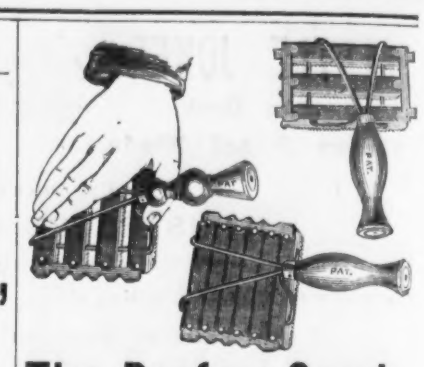

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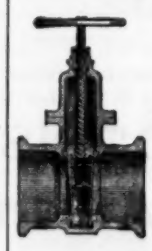

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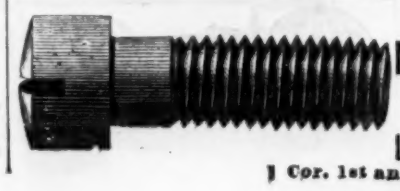

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Crooke & Co., 165 Mulberry, N. Y....29
Roy & Co., West Troy, N. Y....29
Stanley Works, 79 Chambers, N. Y....29
Union Mfg. Co., 99 Chambers, N. Y....7

Can Openers. *Makers of.*
Sprague Can Opener Co., Rochester, N. Y....3

Carriage Bolts, *Makers of.*
Eagle Bolt Works, 2000 Arch, Philadelphia....13
Townsend, Wilson & Hubbard, Phila....12

Carriage Hardware, *Makers of.*
Smith H. D. & Co., Plantsville, Ct....12

Car Wheels, etc., *Manufacturers of.*
Jackson & Woodin Mfg. Co., Berwick, Pa....4
Taylor Iron Works, High Bridge, N. J....6

Chains, *Makers of.*
Kendrick & Runkle, Trenton, N. J....33
Taylor S. G., 98 Indiana, Chicago....34
Wyatt Thos., 71 Eddy, Providence, R. I....33

Chisels, *Manufacturers of.*
Barton D. R., Rochester, N. Y....28
Buck Bros., Millbury, Mass....8

Coal, *Miners of.*
Pardee A. & Co., 111 Broadway, N. Y....31

Coal Vases.
Sidney Shepard & Co., Buffalo, N. Y....27

Coal Hods, *Manufacturers of.*
Easterbrook Wm., 311 Cherry, Phila....11
Smith, Burns & Co., 46 Cliff, N. Y....28

Coffee and Spice Mills.
Lane Brothers, Millbrook, N. Y....3
Enterprise Mfg. Co., Philadelphia, Pa....30

Commission Merchants, *English.*
Goddard Samuel A. & Co., Birmingham, Eng....19

Compasses and Dividers, *Manufacturers of.*
Bemis & Call Hardw. & Tool Co., Springfield, Mass..30

Cooper's Tools, etc., *Dealers in.*
Little Chas. E., 59 Fulton N. Y....7
Swan & Brombacher, 33 & 34 Fulton, N. Y....25

Corn Shellers, *Makers of.*
Livingston & Co., Pittsburgh, Pa....27

Crucibles, *Manufacturers of.*
Newkumet Adam, 1537 N. Front, Phila....23
Strow, Wile & Co., 109 Market, Phila....21
Taylor Robert & Co., 1900 to 1906 Callowhill, Phila....21

Curry Combs, *Manufacturers of.*
Bartholomew G. W. & H. S., Bristol, Ct....13
Kellogg W. P. & Co., Troy, N. Y....24
Lawrence Curry Comb Co., 382 2d Avenue, N. Y....22

Cutlery, *Importers of.*
Boker Hermann & Co., 101 Duane, N. Y....19
Fisher Jos. S., 411 Commerce, Phila....11
King, Briggs & Co., 80 Chambers, N. Y....11
Peace Chas. Jr., 83 Chambers, N. Y....11
Peters Bros., 88 Chambers, N. Y....11
Tilmes A. & Co., 321 Commerce, Phila....11
Ward Asline, 101 Duane, N. Y....11
Wilson Hawksworth, Ellison & Co., 72 John, N. Y...32

Cutlery, *Manufacturers of.*
Burdinshaw Aaron, Pepperell, Mass....11
John Russell Cutlery Co., Turners Falls, Mass....11
Meriden Cutlery Co., 49 Chambers, N. Y....11
Miller Bros. Cutlery Co., W. Meriden, Conn....11
Northampton Cutlery Co., 45 Murray, N. Y....11
New York Knife Co., Walden, N. Y....11
Woods Cutlery Co., Antrim, N. H....11

Differential Pulley Blocks, *Makers of.*
Van Wart & McCoy, 43 Chambers, N. Y....25

Door and Gate Springs.
The Challenge Door Spring Co., 49 Ann, N. Y....30
Van Wagner & Williams, 71 Park Row....36

Dredging, *and Makers of Dredging Machines.*
Am. Dredging Co., 19 S. Delaware ave., Phila....35

Drill Chucks, *Manufacturers of.*
Lambertville Iron Works, Lambertville, N. J....35

Drilling Machines, *Makers of.*
Miller Falls Co., 78 Beekman, N. Y....21
Thorne & DeHaven, Philadelphia....31

Drop Forgings.
Phila. Forging Works, 1203 to 1207 E. Thompson, Philadelphia....34

Edge Tools, *Makers of.*
Barton D. R., Rochester, N. Y....28
Bradley G. W., 97 Chambers, N. Y....7

Egg Beaters, *Manufacturers of.*
Dover Stamping Co., 83 North, Boston....21

Elevators, *Makers of.*
Howard Geo. C., 17 S. 18th, Phila....36
Otis Bros. & Co., 348 Broadway, N. Y....9

Emery.
Abbott & Howard, New York and Boston....32
The Union Stone Co., 6 Exchange, Boston....28

Emery Cloth.
The Union Stone Co., 6 Exchange, Boston....28

Emery Wheels, *Makers of.*
Lehigh Valley Emery Wheel Co., Wiessport, Pa....28
The Union Stone Co., 6 Exchange, Boston....28

Endless Lever House and Weight Movers.
Reamy Truck Co., Baltimore, Md....23

Engineers, Machinists, etc.
Henshall James, 1056 Beach, Phila....35
Moore James, cor. 16th and Buttonwood, Phila....29

Engines, Steam. *Makers of.*
Haskins' Machine Co., Fitchburg, Mass....35
New York Steam Engine Co., 98 Chambers, N. Y....35
Shapley & Wells, Binghamton, N. Y....35
Tanner Wm. E. & Co., Richmond, Va....16
Woodruff Iron Works, Hartford, Conn....34

Exporters.
Keuffel & Esser, 111 Fulton, N. Y....36

Faucets, *Self-Measuring, Makers of.*
Enterprise Mfg. Co., of Pa., Phila. and N. Y....30

Files, *Importers of.*
Carr J. & Riley 82 John, N. Y....32
Dickinson Henry, 66 and 68 Reade, N. Y....11
Fisher Joseph S., 411 Commerce, Phila....11
Frasse Peter A. & Co. 26 Fulton, N. Y....8
Moss F. W., 80 John, N. Y....32
Sanderson Bros. & Co., 16 Cliff, N. Y....32
Spear & Jackson, 116 Duane, N. Y....29

Files, *Manufacturers of.*
Adamantine File Works, Providence, R. I....13
American File Co., Pawtucket, R. I....8
Auburn File Works, Auburn, N. Y....8
Barnett G. & H., 41 and 43 Richmond, Phila....8
McCaffrey & Bro., 1732 and 1734 N. 4th, Phila....8
Nicholson File Co., Providence, R. I....b
Wheeler, Clemson & Co., Middletown, N. Y....10
Walsh, Coulter & Flagler, 83 Chambers, N. Y....8
Western File Works, Beaver Falls, Pa....8

Fire Brick, *Makers of.*
Brooklyn Clay Retort and Fire Brick Works, Van Dyke, St., Brooklyn, N. Y....23
Hall A. & Sons, Perth Amboy, N. J....23
Hall A. & Sons, Buffalo, N. Y....23
Kreischer B. & Son, 58 Goerck, N. Y....23
Newkumet Philip, 23d and Vine, Phila....23
Newton & Co., Albany, N. Y....23
Salamander Works of Woodbridge, N. J., foot of Bethune St., N. Y....23
Watson John R. Perth Amboy, N. J....23

Fluting Machines.
Myers Mfg. Co., 200 Centre, N. Y....7

Flint and Emery Paper and Cloth.
Baeder, Adamson & Co., 730 Market, Phila....11

Founders and Machinists.
Garrison A. & Co., Pittsburgh, Pa....4

Galvanized Iron.
Lefferts Marshall Jr., 90 Beekman, N. Y....4
Whitnum S., Greenpoint, L. I....4

Giant Nail Extractor.
Maltby, Curtiss & Co., Waterbury, Ct....34

Glass, *Importers of.*
Downing A. C. & Co., 57 Beekman, N. Y....27

Governors.
Boardman E. Palmer & Co., Lawrence, Mass....29
Shive Governor Co., Bethlehem, Pa....34

Grindstones.
Wood Walter R., 283 and 285 Front, N. Y....28
Worthington & Sons, North Amherst, O....28

Guns, &c.
Schoverling & Daly, 84 Chamber St....21
Tryon Edw. K., Jr., & Co., 19 N. Sixth, Philadelphia..5
Windmuller Louis & Roelker, 20 Reade N. Y....16

Gunpowder. *Makers of.*
Kneeland F. L. (Dupont) 70 Wall, N. Y....32
Laflin & Rand Powder Co., 21 Park Row, N. Y....34

Hammers, etc., *Manufacturers of.*
Emmet Hammer Co., Brooklyn, E. D., N. Y....2

Hardware, *Brass and Galvanized.*
Tiebout W. & J., 290 Pearl, N. Y....2

Hardware Commission Merchants.
Fernald & Sise, 100 Chambers, N. Y....9
Green R. M. & Co., 100 Chambers, N. Y....20
Graham & Haines, 88 Chambers, N. Y....30
Maltby, Curtis & Co., 62 Reade, N. Y....34
Walbridge Geo. B., 99 Chambers, N. Y....27
Walsh, Coulter & Flagler, 83 Chambers, N. Y....8
Wilson J. Clark & Co., 81 Beekman, N. Y....20

Hardware Dealers.
Lloyd, Supplee & Walton, 625 Market, Phila....20
Quackenbush, Townsend & Co., 59 Reade, N. Y....29
Sheparo Sidney & Co., Buffalo, N. Y....27
Wilson J. Clark & Co., 81 Beekman, N. Y....20

Hardware Importers.
Beam & Murray, 93 Chambers, N. Y....29
Boker Hermann & Co., 101 Duane, N. Y....29
Field Alfred & Co., 47 John, N. Y....29
King, Briggs & Co., 80 Chambers, N. Y....10
Frith E., 16 Cliff, N. Y....10
Van Wart & McCoy, 43 Chambers, N. Y....10
Turnor R. A., 37 Chambers, N. Y....11
Windmuller Louis & Roelker 20 Reade N. Y....15

Hardware Manufacturers.
Buffalo Hardware Co., Buffalo, N. Y....3
Enterprise Mfg. Co., Phila....30
Hart, Bliven & Mead Mfg. Co., 243 Pearl, N. Y....30
Jacobus & Nimick Mfg. Co., 96 Chambers, N. Y....28
Kellogg Wm. P. & Co., Troy, N. Y....20
Lane, Gale & Co., Troy, N. Y....20
Manv & Marshall, 43 Warren, N. Y....13
Middletown Tool Co., 82 Chambers, N. Y....20
Miller's Falls Mfg. Co., 78 Beekman, N. Y....21
Pratt & Co., Buffalo, N. Y....27
Providence Tool Co., Providence, R. I....13
Schweitzer Mfg. Co., 57 Reade, N. Y....30
Shattuck W. F. & Co., 113 Chambers, N. Y....8
Stanley Works, 79 Chambers, N. Y....29
Union Mfg. Co., 99 Chambers, N. Y....7
Williams, White & Churchill, 73 Warren, N. Y....3
Wilson Mfg. Co., 37 Chambers, N. Y....12

Hardware Specialties.
Byington & Northup, Rochelle, Ills....2
Goodnow & Wightman, 25 Cornhill, Boston....29
Markt & Co., 139 Centre, N. Y....31
Post C. C., Burlington, Vt....10
Pugsley & Chapman, 6 Gold, N. Y....36
Shepard Sidney & Co., Buffalo, N. Y....27
Wiley & Russell, Greenfield, Mass....34

Hoisting Engines. *Makers of.*
Howard Geo. C., 17 S. 18th, Philadelphia....35
Otis Bros. & Co., 348 Broadway, N. Y....8

Horse Hay Forks and Fixtures, *Makers of.*
Nellis A. J. & Co., Pittsburgh, Pa....36

Horse Nails, *Makers of.*
Ausable Horse Nail Co., 35 Chambers, N. Y....24
Brundage & Co., Middletown, N. Y....10
Globe Nail Co., Boston, Mass....24
Pratt & Co., Buffalo, N. Y....27
Putnam S. S. & Co., Neponset, Mass....34

Horse Shoes, *Makers of.*
Burden Iron Works, Troy, N. Y....4

House Furnishing Goods.
Tifft & Howard, 12 Murray, N. Y....30

Huskers.
Parks Bros., Princeton, Ills....27

Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y....34

Insurance, Boiler.
Hartford Steam Boiler Inspection and Insurance Co..33

Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y....4
Crane U. O., 104 John, N. Y....4
Hazard & Jones, 204 Pearl, N. Y....4
Read & Dickey, Cleveland, O....36

Iron, Corrugated, *Manufacturers of.*
Mosely Iron Bridge and Roof Co., 5 Dey, N. Y....4

Iron, Charcoal, *Warm or Cold Blast.*
Quincy John W., 98 William, N. Y....4

Iron Commission Merchants.
Althouse Geo. D., 341 Walnut, Philadelphia....5
Blakiston & Cox, 333 Walnut, Phila....5
Colt Edward W., 205½ Walnut, Philadelphia....4
Hand Jas. C. & Co., 614 and 616 Market, Phila....13
Hoopes W. Graham, 419 Walnut, Phila....5
Malin Bros., 228 Dock, Phila....5

Iron, Pig, *Importers of.*
Williamson James & Co., 69 Wall, N. Y....4

Iron Dealers.
Abeel Brothers, 120 South, N. Y....4
Bonnell, Botsford & Co., Youngstown, O....4
Borden & Lovell, 70 and 71 West, N. Y....4
Cleveland, Brown & Co., Cleveland, O....6
Coddington T. B. & Co., 25 Cliff, N. Y....4
Conklin & Huerstel, 99 Market Slip, N. Y....4
Fuller, Lord & Co., 139 Greenwich, N. Y....4
Fuller, Dana & Fitz, 110 North, Boston....2
Gardner Wm., 575 Grand, N. Y....4
Harrison & Gillioon, 558 to 562 Water, N. Y....4
Holden, Hopkins & Stokes, 104 John, N. Y....4
Jackson & Chase, 206 and 208 Franklin, N. Y....4
Judson B. F., 457 and 459 Water, N. Y....4
Matthews Chas. W., 133 Walnut Phila....5
Mohr J. J., Philadelphia....5
Packard, Goff & Co., Youngstown, O....4
Pettee & Mann, 228 and 229 South, N. Y....4
Pierson & Co., 24 Broadway, N. Y....4
Quincy John W., 98 William, N. Y....4
Richards D. W. & Co., 92 Mangin St., N. Y....4
Richardson J. O., 329 Walnut, Philadelphia....4
Smith Gam'l G. & Co., 342 Pearl, N. Y....4
Wallace Wm. H. & Co., Albany and Washington streets, N. Y....4
Warner A. B. & Sons, 28 and 29 West, N. Y....4
Williamson James & Co., 69 Wall, N. Y....4
Whitney A. R. & Co., 88 Hudson N. Y....4

Iron, *Manufacturers of.*
Britannia Iron Works, Middlesbro', Eng....6
Burden Iron Works, Troy, N. Y....4
Cleveland Rolling Mill Co., Cleveland, O....6
Coffin Wm. E. & Co., 8 Oliver, Boston....4
Boston Rolling Mills, 17 Batterymarch, Boston....4
Everson, Macrum & Co., Pittsburgh, Pa....4
Fulton S. & Co., 242 S. Third, Phila....5
Girard Rolling Mill Co., Girard, O....4
Leonard John, 450 & 451 West st., N. Y....4
Milwaukee Iron Co., Milwaukee, Wis....6
Naylor & Co., 6 Oliver, Boston....4
New Haven Rolling Mill Co., New Haven, Ct....6
Old Dominion Iron & Nail Works Co., Richmond, Va. 6
Oxford Iron Co., 81 Washington, N. Y....4
Phœnix Iron Co., 410 Walnut, Phila....5
Rowland Wm. & Harvey, Phila....36
Shoenberger & Co., Pittsburgh, Pa....4

Iron, Swedish, *Importers of.*
Jessop Wm. & Sons, 91 and 93 John, N. Y....32
Mitander Nils, 99 William, N. Y....4

Lace Leather, *Manufacturers of.*
Sales Geo. S., Pawtucket, R. I....24

Lamps, *Manufacturers of.*
Patent Mechanical Lamp Co., 138 Chambers, N. Y....10

Lanterns, *Manufacturers of.*
Dietz R. E., (Tubular) 54 and 56 Fulton, N. Y....36
Howard & Morse, 45 Fulton, N. Y....2

Lead Pipe, &c., *Manufacturers of.*
Bayley, Farrell & Co., Pittsburgh, Pa....2

Knob and Doweling Screws, &c., *Makers of.*
Thurston Knob Screw Co., 349 Washington, Boston..

Locks, *Manufacturers of.*
Bohannan Wilson, Broadway and Kossuth, Brooklyn, E. D....
Branford Lock Works, Branford, Conn....30
Norwich Lock Co., Norwich, Conn....31
Romer & Co., Newark, N. J....11
Trenton Lock Co., 48 Warren, N. Y....13
Yale Lock Mfg. Co., 298 Broadway, N. Y....5

Machinery, *Makers of.*
Bement Wm. B. & Son, Philadelphia....35
Chapin Machine Co., New Hartford, Ct....35
Goodspeed & Wyman, Winchendon, Mass....34
Pratt & Whitney Co., Hartford, Conn....34
Sellers Wm. & Co., 1600 Hamilton, Phila....35
Watson Andrew, 537 Dickinson, Phila....35
Wetherill Robert & Co., Chester, Pa....34
Wood Thomas, 2106 Wood, Phila....35

Machine Screws, *Makers of.*
American Screw Co., Providence, R. I....13
Lyon & Fellows Mfg. Co., Williamsburg, N. Y....22
Rochester Machine Screw Co., Rochester, N. Y....13

Machinists' Tools, *Makers of.*
Blaisdell P. & Co., Worcester, Mass....35
Harrington Edwin & Son, 15th st. and Pa. ave., Phila.34

Machinery and Tools, *Importers of.*
Graham Bros., 122 Cannon street, London, E. C....34

Mathematical Instruments.
Keuffel & Esser, 111 Fulton, N. Y....36

Measuring Tapes.
Eddy Geo. & Co., 353 Classon Ave., Brooklyn, N. Y..10

Meat Cutters. *Makers of.*
Whittemore D. H. Worcester, Mass....33

Metal Dealers and Brokers.
Coddington T. B. & Co., 25 and 27 Cliff, N. Y....2
Colt Edward W., 205½ Walnut, Phila....4
Cort N. L. & Co., 220 & 222 Water, N. Y....2
Crane U. O., 104 John, N. Y....4
Gregg H. L. Co., 108 Walnut, Phila....5
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. 2
Purves A. & Son, cor. South and Penn, Phila....16
Quincy J. W., 98 William, N. Y....2
Sturges Frank & Co., 72, 74 & 76 Lake, Chicago....3
Thomson A. A. & Co., 213 and 215 Water, N. Y....2
Van Wart & McCoy, 43 Chambers, N. Y....2

Metallurgists.
Britton J. Blodgett, 339 Walnut, Phila....5
Drown Thomas M., Lafayette College, Easton, Pa....5
Maynard & Van Rensselaer, 24 Cliff, N. Y....5
School of Mines, E. 49th, N. Y....5

Mining Spikes
Roseberry Geo. D., Pottsville, Pa....4

Miner's Candles, *Makers of.*
Joseph Boyd's Sons, 12 Franklin, N. Y....24

Molding Machines, *Makers of*
Corbin P. & F., New Britain, Ct....20

Molders' Tools.
Carter H., 290 Pearl, N. Y....10

Mop Heads. *Manufacturers of.*
Buffalo Hardware Co., Buffalo, N. Y....3

Mouse Traps, Catchemalive, *Makers of.*
Dietz R. E., 54 and 56 Fulton, N. Y....36

Nickel Platers.
Hartman John, 1042 Ridge avenue, Philadelphia....9
New York Nickel Plating Co., 138 West 25th, N. Y....9

Norway Shapes, *Rollers of.*
Rowland Wm. & Harvey, Frankford, Phila....36

Note Broker.
Gallaudet P. W., 3 and 5 Wall, N. Y....3

Nuts, Bolts, etc., *Makers of.*
American Bolt Co., 210 Lawrence, Lowell, Mass....13
Arms, Bell & Co., Youngstown, O....12
Carpenter David, 402 Water N. Y....4
Clark Bros. & Co., Millidale, Conn....12
Fuller, Lord & Co., 139 Greenwich, N. Y....4
Haskell W. H. & Co., Pawtucket, R. I....12
Lewis, Oliver & Phillips, Pittsburgh, Pa....13
Old Colony Rivet Works, 116 Chambers, N. Y....12
Rosebergy Geo. D., Pottsville, Pa....4
Russell, Birdsall & Ward, Port Chester, N. Y....36
Plumb, Burdict & Barnard, Buffalo, N. Y....36
Sternbergh J. H., Reading, Pa....12
Union Nut Co., 78 Beekman N. Y....22

Oilers, *Makers of.*
Austin J. & Co., 168 Fulton, N. Y....12

Old Iron, etc.
Gregg H. L. & Co., 108 Walnut, Philadelphia....5

Ore Crushers.
Blake Crusher Co., New Haven, Ct....34

Paints.
Rocky Mountain Vermillion Paint Co., Prov., R. I..28

Paints and Oils, *Dealers in.*
Devoe F. W. & Co., 117 Fulton, N. Y....

Patent Solicitors.
Briesen A. V., 253 Broadway, N. Y....18
Howson & Son, Phila. and Washington, D. C....8
Munn & Co., *Scientific American*, 37 Park Row N. Y..29

Picture Nails, etc., *Manufacturers of.*
Richards T. C. & Co., 47 Murray, N. Y....3

Pipes, Fittings, etc., *Makers of.*
Eaton & Cole, 58 John, N. Y....22
McNab & Harlin Mfg. Co., 56 John, N. Y....22
Nelson, Finkel & Co., 439 E. 10th st., N. Y....22
Pancoast & Maule, 222 Pear, Phila....22

Pipe, Water and Gas, *Makers of.*
Brick R. A. & Co., 112 Leonard, N. Y....6
Graff William & Co., Pittsburgh, Pa....22
McNeal John & Sons, Burlington, N. J....6
Morris, Tasker & Co., 15 Gold, N. Y....22
National Tube Works Co., 78 William, N. Y....22
Starr Jesse W. & Sons, Camden, N. J....6
Warren Foundry & Mach. Co., Phillipsburg, N. J....22
Wood R. D. & Co., 173 Broadway, N. Y....22

Piston Packing.
Canfield John & Co., 1321 Fairmount Ave., Phila....30

Plane Irons. *Manufacturers of*
Buck Bros., Millbury, Mass....3
H. Chapin's Son, Pine Meadow, Conn....6
Middletown Tool Co., Middletown, Conn....20

Planes. *Manufacturers of.*
H. Chapin's Son Pine Meadow, Conn....6
Greenfield Tool Co., Greenfield, Mass....24
Stanley Rule & Level Co., 35 Chambers, N. Y....22

Plated Ware.
Rogers & Bro., 208 Broadway....11

Plumbago Lubricator.
N. Y. Black Lead Works, 172 Forsyth, N. Y....36

Plumbers' Materials, *Manufacturers of*
Carr Wm. S. & Co., 106 Centre, N. Y....22

Portable and Stationary Forges.
Kellogg Wm. P. & Co., 121 Chambers N. Y....24
Keystone Portable Forge Co., 129 Exchange place, Philadelphia....6
Manning H. S. & Co., 111 Liberty, N. Y....6

Presses, Power. *Makers of.*
Am. Saw Co., Trenton, N. J....26
The Stiles & Parker Press Co., Middletown, Ct....28

Pressure Blowers. *Makers of.*
Sturtevant B. F., 72 Sudbury, Boston....35

Pumps, *Makers of.*
Burlingham & Purdy, 163 Chambers St....7
Douglas W. & B., Middletown, Conn....7
Union Mfg. Co., 99 Chambers, N. Y....7
Valley Mch. Co., Easthampton, Mass....7

Pyrometers.
Brown Edward, 311 Walnut, Phila....

Railroad Supplies.
Potter Hoffman & Co., 110 Liberty, N. Y....6

Rails, *Importers of.*
Congreve Chas. & Son, 104 and 106 John, N. Y....22

Rails, Iron or Steel, *Makers of.*
Atkins Bros., Pottsville, Pa....6
Cambria Iron Co., Johnstown, Pa....5
Cleveland Rolling Mill Co., Cleveland, O....6
Griswold John A. & Co., Troy, N. Y....32
Milwaukee Iron Co., Milwaukee, Wis....6

Razor Straps, *Makers of.*
B. F. Badger, Charlestown, Mass....3

Rivets.
Old Colony Rivet Works, 116 Chambers, N. Y....12
Timmes Peter, 231 North 6th, Brooklyn, E. D....4

Road Scrapers, &c., *Makers of.*
Revolving Scraper Co., Columbus, O....23

Rolling Mill Machinery, etc., *Manufacturers of.*
Birmingham Iron Foundry, Birmingham, Ct....4
Moore James, Cor 16th and Buttonwood, Phila....29

Rules, *Manufacturers of.*
H. Chapin's Son, Pine Meadow, Ct....6
Stanley Rule and Level Co., 35 Chambers St....22

Sash Weights (sectional), *Manufacturers of.*
Sprague Sash Weight Co., Youngstown, O....2

Saws. *Makers of.*
Atkins E. C. & Co., Indianapolis, Ind....10
American Saw Co., Trenton, N. J....10
Boynton E. M., 80 Beekman, N. Y....10
Flint J. & Co., Rochester, N. Y....10
Disston Henry & Sons, Phila....25
James Ohlen, Columbus, O....10
Peace Harvey W., Williamsburg, N. Y....10
Spear & Jackson, 116 Duane, N. Y....29
Wheeler, Madden & Clemson, Middletown, N. Y....10

Saw Frames, Wood, *Makers of.*
Boynton E. M. 80 Beekman, N. Y....10
Peace Harvey W., Williamsburg, N. Y....10

Scales. *Manufacturers of.*
Richie Bros., 9th near Coates, Phila....10
Shattuck W. F. & Co., 113 Chambers, N. Y....8
Universal Family Scale Co., Guilford, Conn....13

Screws, *Makers of.*
American Screw Co., Providence, R. I....13
Miles F. S., 205 Quarry, Phila....12

Screws, *Importers of.*
Bruce Geo. W., 1 Platt, N. Y....5
Field Alfred & Co., 47 John, N. Y....28
Gueutal George & Son, 39 W. 4th, N. Y....10

Shovels, &c.
Clement & Hawks Mfg. Co., Northampton, Mass....11
Birmingham Shovel Co., 31 Chambers, N. Y....9
Middleboro Shovel Co., 63 Oliver, Boston....8

Skates.
Barney E. H., Springfield, Mass....3
Florence Sewing Machine Co., Florence, Mass....13
Graham & Haines, 88 Chambers, N. Y....30
Patterson Bros., 27 Park Row, N. Y....27
Union Hardware Co., 120 Chambers, N. Y....26

Smelting Works.
Reeves Paul S., 760 South Broad St., Phila....36
Du Plaine & Co., 1203 & 1205 Buttonwood, Phila....34

Stamped and Japanned Tin Ware.
Scheider Jos. & Co., 98 Beekman, N. Y....6
Shepard Sidney & Co., Buffalo, N. Y....27
Sturges Frank & Co., 72, 74 & 76 Lake, Chicago....3

Steam Hammers, etc., *Makers of.*
Dudgeon Richard, 24 Columbia, N. Y....34

Snaps, Harness. *Makers of.*
Middletown Tool Co., Middletown, Conn....30

Spiegel.
Quincy John W., 98 William, N. Y....2

Spikes, R. R. &c., *Manufacturers of*
Fahrion, G. W., Niles, Ohio....4
Starke Adolph, 441 East 10th, N. Y....4

Springs.
Rowland Wm. & Harvey, Frankford, Phila....36

Squares, Steel and Iron, *Makers of.*
Hart, Bliven & Mead Mfg. Co., 243 Pearl, N Y....30

Steam Pumps, etc., *Manufacturers of*
Carr A. 43 Cortlandt....N. Y....30
Enterprise Hydraulic Works, 22d Race St., Phila....34
Guild & Garrison, Williamsburgh, N. Y....34
Hall C. Henry & Co., 29 Cortlandt, N. Y....34
Philadelphia Hydraulic Works, cor. Evelina and Levant, Philadelphia....35
Steele & Condict, 88 Liberty, N. Y....29

Steam Traps.
Jones Alonzo L., 51 S. 4th, Phila....12
Richards & Pike, 243 Ledger Place, Philadelphia....36
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Barnum E. T., Detroit, Mich....2
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Parker Sam'l & Co., Wethersfield, Ct....2

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Roebling's John A. Sons, Trenton, N. J....2

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Development and Growth of Pipe Casting.*

From a lecture delivered before an association of gas and water men, at Cassel, in Germany, by A. Ledebur, an engineer from Groditz, we abstract the following:

The first cast iron pipes were made in Germany at the beginning of the 17th century, and were used in the mines. Cast iron water pipes were first made on a large scale in the years 1672 to 1682, at a French foundry, and were used for the water works at Versailles. These pipes were joined by flanges, and the largest were 8 in. in diameter. Several of these were placed side by side, showing that they had either not attempted, or not succeeded, in casting pipes of larger diameter. This first large experiment on the use of cast iron for water pipes seems to have met with little encouragement, and during the whole of the 18th century we find only a few isolated notices of pipe casting.

About the middle of the last century the pipes began to be cast in sand, having been previously cast in clay or mud. This was a great advance in the art. Pipes of that day which have come down to us have a considerable thickness with a relatively short length of about 3 to 5 feet. They are usually joined by flanges. Only on pipes that did not have to bear any considerable pressure were muffs employed.

Toward the end of the second decade of the present century the use of illuminating gas began to spread from England over the whole inhabited earth. This opened a new field for the use of cast iron pipes, and the extended use stimulated the manufacturers to contrive means of improving the method of casting, and consequently to improve the quality of the product while decreasing its cost. At the same time the invention of the stronger muff connections simplied its use considerably.

England, which was the most energetic in the introduction of gas illumination, first perfected the casting of iron pipes. While in Germany and France pipes only 8 to 12 in. in diameter were cast, and these, too, in short lengths, the English had already learned to cast pipes of every size, and of the lengths still in use. It is only about 20 years since foundries were started in Germany which made a speciality of pipe casting, and in this way only is it possible to drive out English competition more and more. Although the English foundries served as models, it is pleasant to note that the German works were very soon able to stand side by side with the English in perfection, and we can even say without exaggeration that in many cases they excell the English.

One of the reasons for this advance in pipe casting was the introduction of the upright casting in dry molds. The upright method possesses, as we know, very considerable advantages over the horizontal. For, when the core is placed horizontal in the casting, if the length is considerable, it bends more or less, first downward from its own weight, then upward from the buoyancy of the liquid iron as it flows in, hence the pipe undoubtedly has walls of uneven thickness. This is the reason that it was for a long time impossible to cast tubes longer than 4 or 6 feet. The method frequently employed for other kind of castings, of stiffening the core with wrought iron supports, did not answer well for gas and water pipes, since, as a rule, there was a spot about the core-prop which was not tight. On the contrary, if the core stands up there is no tendency to bend, and the walls must remain of even and constant thickness if the core is fastened in the right position.

A second advantage of upright casting is that the gases and vapor evolved during the pouring escape more rapidly upward than in a horizontal direction, hence air bubbles are less liable to form in the pipe.

The method of molding to which the pipe casting of the present century owes its first and greatest advance, is as follows:

The mold is first made in a horizontal position. A flask which opens in two equal parts is employed, one-half of the pattern being imbedded in each side of the flask. After the pattern is taken out, the flask is shut together and placed toward evening in a drying chamber. The next day it is taken out, the core introduced, also in a horizontal position, the ends resting in the so-called core marks (Kernmarken), the two halfs of the flask are fastened together, the completed mold placed upright, and the metal poured in.

This was for a long time considered a most excellent method, and it rightly deserves praise, for it soon brought pipe casting to a perfection previously unthought of. Still this method possessed many disadvantages; such as the frequent lifting and transporting of the flasks which required the use of cranes, and the loss of time during the drying, which required at least some hours, and during this time all work ceased, for it was customary to put all the molds in the heated chamber at the same time. There were, too, other circumstances which combined to render the work expensive. Notwithstanding the greatest care in placing the core and in adjusting the flask, a bend or slide would sometimes occur. Or the two halves of the flask would not exactly coincide, the center of one semi-circle not falling upon the center of the other, and the walls of the pipe would be of unequal thickness.

To overcome these difficulties another method of molding was devised and first employed at Fronard near Nancy. This method, with greater or less modifications, has been introduced within a few years into most of the large pipe foundries in Germany. It possesses a number of advantages over the previous method.

In the new method the pipe molds are made in a vertical position, the pattern is drawn out vertically, and the mold is dried in a vertical position by passing heated air, or gases produced by combustion, up through them. The two parts of the flask are fastened together before beginning to make the mold, and are not loosened or moved during all these operations. This method saves time, and renders it almost absolutely certain that the walls of the pipe will be of even thickness, for the core, which is let down into the mold, has a wrought iron turned axle which fits into a turned and centered hole in the flask. As the mold consists of only one piece instead of two put together, no seam is formed on the pipe, which was unavoidable by the old method. This seam injured the appearance of the exterior, and by weakening the iron gave rise to leaks. Another circumstance of special importance is that every flask has an independent drying arrangement, generally a portable fire box, and hence may be dried independently of the others while the molder is making his next mold or casting one already dry. Beside this, the molds dry much faster by hot gases passing through them than in a drying chamber, so much so that by the new process much less sand is used than formerly. A large pipe foundry recently erected by a stock company at Groditz, in Saxony, is arranged for making pipes in this way exclusively.

Finally, we may mention briefly a new method of making molds similar in principle to that just described, except that hand labor in stamping the sand is replaced by machine labor. This process seems to have an important future before it. For many years the greatest varieties of methods for making pipe molds by machinery were tried in England and gradually abandoned. After this, a pipe foundry at Marquise, near Calais, succeeded in employing machinery, and now several large foundries in Germany are on the point of introducing such machinery. In this method, also, the pattern, which need not be the whole length of the casting, is drawn vertically out of the mold by means of the machine, while the sand about it is packed by stamps worked by machine power, and forming part of the machine itself. As the molding machine cannot be moved from its place, the flask must be moved to another place to be finished, so that other molds may be made. The mold is dried in a second place, cast in a third, and so on, until, finally, the empty flask comes back to the machine to be filled again. In this the principle of division of labor is carried out to perfection.

It is obvious that the use of machine made molds can scarcely exert an important influence—certainly not a beneficial one—upon the quality of the pipes made, as compared with the process previously described. The principal advantage consists in the possibility of a larger production in a given time in the same foundry than could be reached by hand labor—that is to say, hastening the work and using the flasks oftener.

Where the workmen are energetic and intelligent men, who recognize the advantages of using machinery, it would be an advantage to employ it; but where the workmen themselves do not work any more intelligently than machines, it is scarcely advisable to try to aid their labor (for some hand labor is indispensable with every molding machine) by furnishing them with fast working machines for molding.

* Translated for *The Iron Age* from *Deutsche Industrie Zeitung*.

Scientific and Technical Notes.

In regard to the success of De Haen's method of

PURIFYING FEED WATER WITH LIME AND CHLORIDE OF BARIUM,

Dr. Frank stated in the general assembly of beet sugar manufactors, that it had been employed on a large scale in all the sugar works in Leopoldshall, where the water contains a large amount of sulphate of lime. These large experiments have proved its entire success. Dr. Frank states that the action is not only chemical, but also mechanical. De Haen's process acts like the saturation method in sugar manufacture, a quantity of organic matter is carried down with it, and in spring and fall, when the water is dirty, this is quite important as the organic matter injures the iron. The best example of the excellence of De Haen's process is the case of a boiler which was not perfectly clean when this process was introduced, having a thick deposit on the rivets and joints. After the purified water had been used a while the boiler was clear and bright, showing that the water is so pure that it can dissolve the sulphate of lime. Previously it was necessary to break out the scale every six weeks; now some have run 15 weeks at a time, and then been opened and the bottom merely swept out with a broom, and set going again, as they were entirely clean. For boilers with about 800 square feet of heating surface, at the present price for chloride of barium, which is higher than it need be, the expense is (in Germany) about one thaler per day. The exact data are wanting for judging of the total useful effects of this purification, but the saving of coal must be greater than the total expenditure for purification. Beside it is calculated that breaking out the incrustations injures the boilers about 100 thalers per annum, not to mention the time that is lost while the boiler is cut of use. Even at the present price for chloride of barium the process is deserving a trial with water containing a large amount of sulphate of lime.

W. Rath, of Plattenburgh, Westphalia, when

TEMPERING WIRE,

in order to avoid the formation of scale, which cannot be entirely avoided by the use of closed vessels for heating, immerses the wire in a thick, syrupy solution of chloride of calcium before heating. The protecting film formed around the wire is rinsed off with cold water after heating and cooling. An English patent has been taken out for this simple contrivance.

Dr. Grass recomends the following ingenious method of

DETERMINING THE QUANITY OF WATER EVAPORATED IN A STEAM BOILER:

By means of a standard solution of nitrate of silver he first determines the quanity of chlorine in the feed water, and then the quantity of chlorine in the water of the boiler at two different times several days apart. From the increased quanity of chlorides he calculates the amount of water evaporated. He recommends as a suitable normal solution of silver to dissolve 23·94 grams nitrate of silver in 1000 cubic centimeters of distilled water. Each cubic centimeter of this solution will precipitate exactly 5 milligrames of chlorine. To indicate the end of the reaction when all the chlorine is precipitated, he employs the neutral chromate of silver, which produces with any excess of silver solution a bright red color. Dr. Grass is of the opinion that this method may be easily applied by the most inexperienced person, but we doubt if any satisfactory results, either in volumetric or gravimetric quantitative analysis can be obtained without a certain amount of practice, as the operations are exceedingly delicate and require both a quick eye and a steady hand.

We find in *Dingler's Journal* a description of a method for

PRODUCING A GREEN BRONZE ON IRON,

devised by Paul Weiskopf, which is as follows: One part of sylvate of silver is dissolved in 20 parts of oil of lavender, forming a sort of varnish, which imparts a beautiful and permanent green bronze appearance to cast and wrought iron, sheet iron and wire. The surface to be bronzed is cleansed and dried, but need not be polished. The varnish is thinly applied with a camel's hair brush, and the object heated quickly to 300° Fah. The proper temperature is indicated when the article shows a bright green color which is even all over it. To produce a bronze drawing, Venetian turpentine or colophonium solution is substituted for part of the lavender oil. It is better to rub up the dry sylvate of silver with the resin in a mortar or on a pallette, and then add enough lavender oil to make it as thin as ordinary paint. Articles of iron bronzed in this way can afterward be electroplated, the copper not being deposited on the portions bronzed. Copper and brass coated with this bronzing, and heated to 480° Fah., acquire a matt gray exterior, which is somewhat reddish, and not permanent until covered with a thin coat of varnish, when it resembles the so-called oxidized metal. We may add that sylvic acid is one of the constituents of ordinary resin or colophonium, and differs from pinic acid in being soluble only in hot alcohol, from which it crystallizes in colorless plates. To prepare sylvic acid, the resin is first treated with cold alcohol to dissolve the pinic acid; the residue is dissolved in hot alcohol and allowed to crystallize. Carbonate or acetate of silver dissolves in sylvic acid, forming sylvate of silver.

The Swedish administration of the iron office has sent the Lafayette College, Philadelphia, a complete collection of the iron ores of Sweden and their productions. This extensive and valuable collection is a duplicate to the one given some years since to the Royal School of Mines, in England, by the Swedish government. It will be of special valuable interest to the ironmasters of Pennsylvania, and the college authorities intend to make it accessible at all times for their examination.

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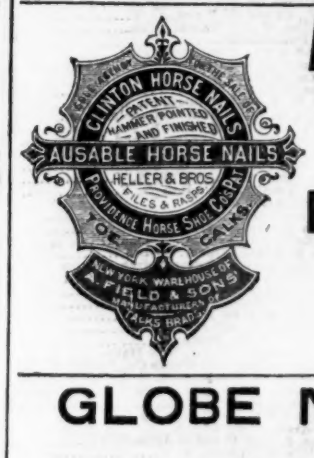
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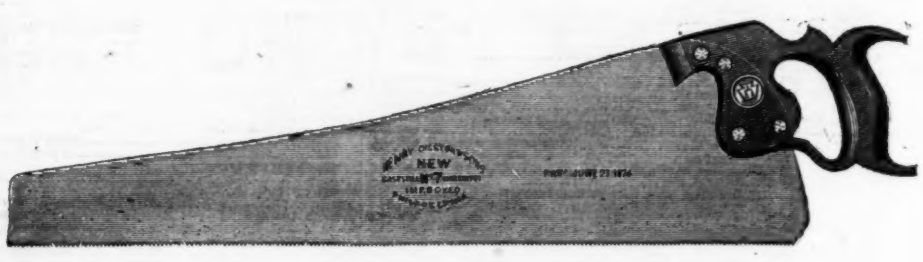

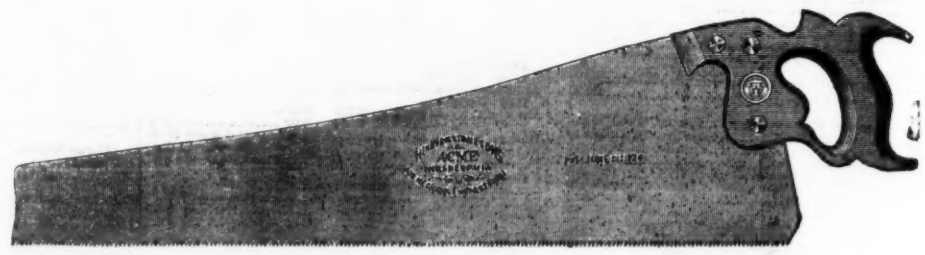

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Eagle, Philadelphia.....dis 50 @ 50&10 %
Philadelphia Pattern, P. S. & W.....dis 50&10 %
Tire, Bessemer Steel, Hubbard & Curtiss.....dis 50 %
Carriage and Tire, R. B. & W.....old list dis 50&10 %
Plow, R. B. & W.....dis 30 %
Stove, R. B. & W.....dis 20 %
" Shelton Co, Shaved Heads.....dis 20 %
Union Nut Co., old list.....dis 30&2½&5 %
" " Stove.....dis 15 %
Machine.....dis 40 @ 45 %

Borax.
Boring Machines.
Kellogg's.....dis 15 %
Snell Mfg. Co., Rice's Patent.....dis 20 %
" " Regular.....dis 20 %
Douglass Mfg. Co.....dis 20&10 %
Mortising Machines each.....$18 00

Bow Pins.—Union Nut Co., new list..dis 50&10&5 %

Braces.
Barner's Patent.....dis 40&5 %
Q. S. Backus.....dis 40&10 %
Wilson Mfg. Co.....new list dis 10 %
Spofford's Patent.....dis 40&5 %
Noble's Patent.....dis 40&5 %
Bartholomew's American Ball.....dis 10&10 %
" Patent Grip.....dis 40 %
Ives' Novelty.....dis 40&5 %
Common Ball.....dis 15&10 %

Brackets.—Shelf.....dis 60&10 %

Bull Rings.—Union Nut Co., new list..dis 50&10&5 %

Bung Hole Borers.
Common and Ring.....dis 25 %
Enterprise Mfg. Co.....dis 20 %
Ives' Tap Borers.....dis 25 %

Butchers' Cleavers.
Huntsman & Beckley Mfg. Co.....dis 20&10 %
Bradley's.....dis 25 %
Beatty's.....new list dis 20 %

2	3	4	5	6	7	8	9
$19 00	$21 50	$24 00	$27 00	$30 00	$33 50	$36 50	$40 00

Hart Mfg. Co.....dis 45&10 %

0	1	2	3	4	5	6
$23 25	$29 75	$30 25	$33 75	$40 25	$49 50	$54 00

Butts.
Wrought Brass.....new list dis 30 %
Cast Fast Joint, Narrow.....dis 40 @ 50&5 %
" " Broad.....dis 50&10 %
Cast Loose Joint, Narrow.....dis 55&10 %
" " Broad.....dis 60&10 %
" " Mayer.....dis 50 %
" " Parliament.....dis 50 %
Drilled Wire Jointed—
Narrow.....dis 55&10 %
Broad.....dis 50&10 %
Loose Joint.....dis 60 %
Wrought Fast Joint, Narrow.....dis 5 &10 %
Wrought Broad.....dis 35 %
" Loose Joint.....dis 35 %
Wrought Table and Back Flaps.....dis 30 %
Lull & Porter's Blind Butts.....dis 50 %
Palmer Blind Butts.....dis 30&10 %
Nicholson Blind Butts.....dis 40&10 %
Parker's Blind Butts.....dis 55&10 %
Hunter's Blind Butts.....dis 33½&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5..dis 50&10 %
" " " " No. 40 and 50....dis 50&2½ %
" " " " No. 20.....dis 60&10 %
" Mortise " " 3, 4, 4½, 6, 8, 10...dis 33½ %
Seymour's.....dis 50&5 %
Shepard's.....dis 50&5 %
Barretson's...No. 1, dis 50&10 %; Nos. 3 and 7, dis 50&5 %
The American Spiral spring Butt Co.....dis 5 %
Standard.....dis 50&5 %

Caps—Percussion, per M.
G. D.....37 @ 40c
City's E. B.....1-4s, 38c.; 1-10s, 45c., gold
" Double Waterproof, 1-4s, $1 45; 1-10s, $1 52½c., gold
" Colt's.....1-10s 70c., gold

Carpet Sweepers.
Union.....each $2 75 net
Welcome.....each 2 75 net

Cartridges.
Metallic.....dis 50&10 %

Cards.—Horse and Curry.....dis 30&10 %
Cotton.....new list dis 10&10 %
Wool.....new list dis 15&10 %

Carpet Stretchers.
P. S. & W.....per doz $2 00; dis 40&5 %
Sargent's.....per doz $2 85—dis 50&10&10 %

Casters.
Bed.....dis 30&10 %
Plate.....dis 40&10 %

Cattle Leaders.....new list dis 60&10 %

Chain
English Coil.....net gold
₩ ℔.....
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2.....by the cask, ₩ pair, gold, 58c
Trace, 7-10-2.....by the cask, ₩ pair, gold, 68c
Galvanized Pump Chain.....₩ ℔ 13c
German Halter Chain.....new list, Jan. 1, dis 20 %
German Coil.....new list, Jan. 1, dis 20 %
Jack Chain, Iron.....dis 50 %
" Brass.....dis 40 %

Chalk.
White.....₩ gross, 50c
Red.....₩ gross, 75c
Blue.....₩ gross, 90c
Grayons.....₩ gross, 14c

Chisels.
Socket Firmers.....dis 60&10 %
Socket Framing.....dis 6 &10 %
Socket Corner.....dis 60&10 %
Tanged Firmers.....dis 45&10 %
Butcher's.....$5 50 to £ gold—new list
Newbould's.....$5 50 to £ gold
Spear & Jackson's.....$5 50 to £ gold—new list

Clamps.
Cabinet.....dis 60&10 %
Judd's.....dis 45&10 %
Lambert's.....dis 20 %
Providence Tool Co.....dis 10 %

Clips, Axle.
Norway or Best.....dis 30 %
Superior.....dis 50 %
"Star," Superior Philadelphia.....dis 45&5 %

Coal Shovels.
Iron Handled.....₩ doz, $ 85 @ 1 25
Wooden Handled.....₩ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co.....dis 15 @ 25 %

	14	15	16	17	18	incn.
Japanned	$6 00	6 25	6 75	7 50	8 00	per doz.
Galvanized	9 50	10 00	10 75	11 50	12 50	"

Morning Glory Funnel Hods—

	No. 15	16	17	
Japanned	$9 00	10 50	12 00	per doz
Galvanized	13 00	14 50	16 00	"

Sidney Shepard & Co.'s new list.....dis 10 %

Cockeyes.....dis 30 %

Cocks.
Brass Backing.....dis 20&10 %
Lock and Globe.....dis 2.&10 %

Coffee Mills.
Board and Box.....dis 15 %
Increase Wilson's.....new list dis 15 %
Selsor's Pat.....$9 50, $10 50—dis 25 %
French Steel.....dis 15 %
The Swift.....dis 25 %
" American " (Enterprise Mfg. Co).....dis 20 %
Diamond, per doz (2 to 6).....dis 10 %

Compasses and Dividers.
Bemis.....dis 35 %
Cook's.....dis 15 %
Excelsior.....dis 30 %
Peck Stow & Wilcox.....dis 25 %

Coopers' Tools.
Bradley's.....dis 15 @ 20 %
Chas. E. Little.....dis 20 @ 25 %
Swan & Brouhard.....dis 15 @ 20 %

Corkscrews.....dis 25 %

Corn Knives and Cutters.
Bradley's.....dis 10 %

Croquet.—Phineas Smith.....dis 40&10

Crow Bars.
Cast Steel.....₩ ℔ 11c. net
Iron, steel points.....₩ ℔ 6c

Crucibles.
Gauntlet & Co.....₩ No. 5½c
Curling Irons.....dis 20&10 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass.....dis 20&10 %
Fitch's.....dis 15&10 %
Rubber.....₩ doz, $9 00—dis 15 %
Schweitzer Mfg. Co.....dis 20 %
The Lawrence Curry Comb Co.....dis 20 %

Curtain Pins.—Silvered Glass.....old list dis 5½ %

Cutlery.
American Table.....net list
American Pocket.....dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co...dis 20&10 %

Dippers.
Britannia.....per doz 7 50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain.....per doz $3 25—dis 20 %
" Rimmed.....per doz 3 75—dis 2 0 %

Dog Collars.
Embossed Gilt.....dis 30 %
Leather.....dis 20 %

Door Springs.
Gray's.....$7 50 ₩ doz—dis 50&10 %
Torrey's Patent.....$7 50 ₩ doz—dis 50&10 %
Palmer's Japanned No. 6.....₩ doz $6 00
" Co pered " " 6 00
" Silvered " " 8 00
Challenge,—
Japanned.....₩ doz $4 00 @ 6 00 } dis 25 %
Bronzed.....₩ doz 5 00 @ 7 00 }
Nickel Plated.....₩ doz 6 50 @ 9 00 }
Gem.—No. 1 large, Japanned.....per doz $4 00
No. 2 medium.....per doz 3 50
No. 3 small.....per doz 3 00
In Gross Lots.....dis 10 %

Drawing Knives.....dis 60 @ 60&10 %
Bradley's.....dis 25 %
Adjustable Handled.....dis 15 %

Drills.
Ingersoll's Ratchet.....dis 25 %
Moore's Triple Acting Ratchet.....dis 20 %
Whitney's Ratchet.....dis 20 %
Blacksmiths'.....each $2 60 net

Drill Chucks.—The Danbury..each 10 00, dis 25 @ 30 %

Drug Mills.
American Drug Mills (Enterprise Mfg. Co.).....dis 20 %

Egg Beaters.

Monroe's.....	8 in.	10 in.
	Per doz $8 00	9 00

Dover.....₩ doz net $6 00
National.....₩ doz $4 50—dis 20 %
Peerless.....₩ doz $4 00—dis 10 %

Emery.
Genuine Chester—Regular Nos..... ₩ ℔ 7c } dis 10 %
" Flour and FF..... ₩ ℔ 4c }
Washington Mills—Regular Nos.....₩ ℔ 8c
" Flour.....₩ ℔ 5c

Enameled and Tinned Ware.
Kettles.....dis 35 %
Sauce Pans.....dis 25 %
Glue Kettles.....dis 20 %
Tinned Saucepans.....dis 25 %

Escutcheons.
Brass Thread.....dis 60&10 %
Wood.....dis 25 %

Faucets.
Cork Lined, Wood.....dis 60&10 %
Fenn's.....dis 50 %
" Cork Stops.....dis 40 %
Star.....dis 55&10 %
Frary's Patent Petroleum.....dis 15&10 %
Taylor's Pattern " .....dis 20&10 %
Wood and Metallic.....dis 40 %

Felloe Plates.....₩ ℔ 14c; dis 10 %

Files.
American File Co.....$5 00 to £ currency—dis 10 %
Nicholson.....$5 00 to £ currency—dis 12½ %
Hartford File Co.....$5 50 to £ currency—dis 10 %
Newbould's.....5 25 to £ gold
Rothery's.....$5 to £ currency
J. & Riley Carr's Files and Rasps.....5 50 to £ gold
Stubs'.....5 50 @ 9 00 to £ gold
Butcher's.....5 50 to £ gold
Walter Spencer & Co.'s "Diamond".....5 25 to £ gold
Spear & Jackson's.....5 00 to £ gold
Hargreaves, Smith & Co.'s.....5 00 to £ gold
Jowitt's.....5 25 to £ gold
"Western".....5 00 to £ net
W. K. & C. Peace's "Imperial".....5 25 to £ gold
R. Ibbotson.....5 00 to £ gold
Beam & Murray, "Cyclops".....4 85 to £ gold
Fisher's.....4 75 to £ gold
Goodlad's.....4 00 to £ gold
Moss & Gamble.....5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.)5 00 to £ gold
" Horse Rasps.....5 50 to £ gold
"Philo Sheffield," P. T. Co.....5 00 to £ gold

Floral Tools.....dis 25 %

Fluting Machines.
Mrs. Coles, 7 inch Rolls.....6 50
" 5 " 5 50
Knox, with 4-inch Rolls.....4 40 each net
" " 6 " .....5 25 each net
O. K.....6 50 each net
Peerless, 4-inch Rolls.....4 00 each net
" 5 " .....4 75 each net
Excelsior, No. 1.....4 75 each net
" No. 2.....6 50 each net
Diamond.....7 50 each net
Climax 7-inch Rolls.....8 00 each net
Empire.....4 00 each net
Eureka, No. 1, 6-inch Roll.....8 00 each net
" No. 2, 5-inch Roll.....6 00 each net
K. F. M., 4½-inch Roll.....5 50 each dis 15 %
" 6-inch Roll.....6 00 each dis 15 %
Myers Fashion Fluter, 4½ inch Rolls.....3 00 each net
" Convex Brass Fluter, Sad Iron attachment..$1 75
Domestic Fluter.....$1 75 each net
Fairy, Self-Heater.....9 00 each net
Genuva Hand Fluter.....$15 00 per doz net
Champion, 6 inch rolls.....$6 00 each dis 10 %
" 4 inch rolls.....$5 00 each dis 10 %

Fluting Scissors.....dis 25&10 %

Forges.
Keystone Portable Forge Co.'s.....dis 20 %
" Empire" (W. P. Kellogg & Co.).....dis 20 %

Forks.
Hay, Manure & Spading.....dis 30 %
Plated A 1.....dis 40, 10&5 %

Freezers.
Champion.....dis 35¼
Torrey's.....dis 50 %

Fry Pans.—P. S. & W.
Tinned.....dis 30 %

₩ doz.....	$3 00	3 25	3 62	4 00	4 50	5 00	5 50	6 00	7 50
No.....	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished.....dis 35 %

₩ doz.....	$3 20	4 00	4 70	5 20	6 00	7 00	8 00	9 00
No.....	1	2	3		5	6	7	8

Gas Stoves.
Tifft & Howard.....dis 20 %

Gauges.
Marking.....dis 45&10 %
Wire.....dis 10 %

Gimlets.—Metal and Wood Head.....dis 25&10 %

Grind Stones.—J. F. Green & Bro.....dis 20 %

Grind Stone Fixtures.....dis 50&10 %

Hammers.
Emmet Hammer Co.....dis 25 %
Humason & Beckley Mfg. Co.....dis 16⅔&10 %
Maydole's, new list.....dis 5 %
Cheney's.....new list net
Verree.....dis 5 %
Yerks & Plumb.....dis 12½ %
Magnetic Tack.....dis 20&10 %
Warner's.....list net

Hand Cuffs and Leg Irons.
Towel's.....dis 25 %
Providence Tool Co.'s.....dis 10 %
Hand Cuffs.....$15 per doz
Leg Irons.....$25 "

Handles.
Wrought Chest.....ots 60&10 %
Flush Chest.....dis 60&10 %
Lifting.....dis 60&10 %
Coffin.....dis 50&10 %
Saw and Plane.....dis 30&10 %
Hammer and Hatchet.....dis 10 %
Greensboro', Axe, Pick, Hammer, &c.....dis 10 %
Woolworth Axe, Pick and Sledge.....dis 10 %
Brad Awl.....per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 10&10 %
" " " large " 6 25—dis 10&10 %
Apple " " ass'td " 6 00—dis 10&10 %
" " " large " 7 00—dis 10&10 %
Socket " " ass'td " 3 50—dis 10&10 %
" Framing " " 6 00—dis 10&10 %
File " " 3 50—dis 10&10 %
Auger " " 5 50—dis 10&10 %
" large " 6 50—dis 10&10 %

Hangers.
Barn Door.....dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.).....dis 50 %
Novelty.....dis 30 %

Harness Snaps.
Henshaw's.....dis 25&10 %
Judd's.....dis 40 %
Pitch's.....dis 50 %
Hotchkiss'.....dis 10 %
Andrews'.....dis 25 %
Sargent's.....new list dis 50&10 %
New York Wire.....dis 2½&20 %

Hatchets.—Isaiah Blood.....dis 10 %

Shingling, Nos.	1 2 3.....	₩ doz $7 50	8 00	8 50
Claw, "	1 2 3.....	₩ doz 8 50	9 00	9 50
Lathing, "	1 2 3.....	₩ doz 7 50	8 00	8 50

Hunt's.....dis 10 %

Shingling, Nos.	1 2 3.....	₩ doz $7 25	8 00	8 50
Claw, "	1 2 3.....	₩ doz 7 75	8 50	9 25
Lathing, "	1 2 3.....	₩ doz 7 50	8 25	9 00

Hurd's.....dis 30 %

Shingling, Nos.	1 2 3.....	₩ doz $8 00	8 50	9 00
Claw, "	1 2 3.....	₩ doz 9 00	9 50	10 00
Lathing, "	1 2 3.....	₩ doz 8 00	8 50	9 00

Newark's Edge Tool Co.'s.....dis 25 %

Shingling, Nos.	1 2 3.....	₩ doz $6 50	7 00	7 50
Claw, "	1 2 3.....	₩ doz 7 25	7 75	8 25
Lathing, "	1 2 3.....	₩ doz 6 50	7 00	7 50

Yerks & Plumb.....dis 12½ %

Shingling, Nos.	1 2 3.....	₩ doz $7 00	7 50	8 00
Claw, "	1 2 3.....	₩ doz 7 50	8 00	8 50
Lathing, "	1 2 3.....	₩ doz 7 00	7 50	8 00

Simmon's.....dis 15 %

Shingling, Nos.	0 1 2 3.....	₩ doz $7 50	8 00	8 50
Claw, "	1 2 3.....	₩ doz 9 00	9 50	10 00
Lathing, "	1 2 3.....	₩ doz 8 00	8 50	9 00
Broad, "	1 2 3.....	₩ doz 9 00	10 00	12 00
" "	4 5 6.....	₩ doz 11 00	16 00	18 00
" "	7 8.....	₩ doz 20 00	22 00	

Elephant.....dis 25 %

Shingling, Nos.	1 2 3.....	₩ doz $8 00	8 50	9 00
Claw, "	1 2 3.....	₩ doz 9 00	9 50	10 00
Lathing, "	1 2 3.....	₩ doz 8 00	8 50	9 00

J. P. Verree & Co.....dis 5 %

Shingling, Nos.	1 2 3.....	₩ doz $7 00	7 50	8 00
Claw, "	1 2 3.....	₩ doz 7 50	8 00	8 50
Lathing, "	1 2 3.....	₩ doz 7 00	7 50	8 00

Underhill's.....dis 10 %

Shingling, Nos.	1 2 3.....	₩ doz 7 25	8 00	8 75
Claw, "	1 2 3.....	₩ doz 7 75	8 50	9 25
Lathing, "	1 2 3.....	₩ doz 12 00	11 00	13 00

Hinges.
Gate, Western.....₩ doz $6 25—dis 60&10 %
" N. E.....₩ doz 11 25—dis 6 .&10&10 %
" N. Y. State.....₩ doz 7 20—dis 60&10 %
Rolled Plate.....dis 75 %
" Raised.....dis 75 %
Wrought Strap and T.....dis 35 @ 40 %
Providence Plate. { 6 and 8 in. list 11c. } dis 25 %
{ over 8 in. list 9½c. }
Screw Hook and Strap..... { 8, 10, 12 in. 7¼c } net
{ 14 to 36 in. 5¾c }
Heavy Welded Hook..... { 8 to 12 in., 8c } dis 10 %
{ 14 in & up, 8½c }
{ ⅜ to 1 in., 9½c }
Screw Hook and Eye..... { ⅜ in. 10½c } net
{ ⅞ in. 12½c }

Hoes.
Solid Shank, C. S.....₩ doz $8 00—dis 30 %
Socket.....₩ doz 9 00—dis 30 %
Riveted Eye.....₩ doz 5 00—dis 30 %
Grub.....dis 25 %
Planter's—Winsted.....add 10 %
Scovill.....add 33⅓ %
Scovill Pattern (Winsted).....add 20 %

Hooks.
Harness.....dis 60, 10&5 %
Bird Cage.....dis 70&10 %
Cotton.....dis 50 %
Belt.....dis 50&10 %
Clothes Line.....dis 60&10&10 %
Bench—Skinner's.....per doz $5 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ₩ doz.....dis 10 %
Bench—Weston's No. 1, $8 00; No. 2, $7 00 per doz net
" —McGill's.....$3 00 per doz, dis 10 %
Wardrobe, Japanned.....new list dis 60, 10&10 %
Hat and Coat " .....new list dis 60, 10&10 %
Wrought Staples and Hooks and Staples.....dis 70&10 %
Screw Hooks and Eyes, revised list.....dis 70, 10&10 %
Grass.....dis 2 %
Whiffletree—Patent.....dis 30 %
Hooks and Eyes—Malleable Iron.....dis 53 %
" Brass.....dis 53 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	32c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable Horse Nail Co.

No.	5	6	7	8	9	10
Ausable	30c	27c	25c	24c	23c	22c
Pointed and Polished	31c	28c	26c	25c	24c	23c
Pointed and Blued	32c	29c	27c	26c	25c	24c

In lots of 1000 lbs., 5% discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8	9	10
	32c	30c	29c	28c	26c	25c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9
	31c	28c	26c	25c	24c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	5	6	7	8	9	10
	28c	26c	25c	24c	23c	22c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
Patent Finish	24	23	23	22	21	20
Extra	30	27	25	24	23	22

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	5	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c	
U B	29c	27c	26c	25c	24c	

In lots of 1000 lbs., dis 5 %.
Star Brand.....₩ ℔ 16c
Morgan.....14c

Horse Shoes.
Burden.....₩ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern.....₩ keg, 5 95
" " R. I. Pattern.....₩ keg, 6 35
Mule Shoes.....₩ keg, 6 85

Ice Picks.
Iron.....₩ gross $12 00 @ $16 00 net
White's.....per doz $2 50 dis 10 %
W. H.....per doz 1 00 dis 10 %
Dunlap's.....per doz 3 00 net

Kettles.
Brass.....₩ ℔ 35c net
In lots of 500 lbs.....₩ ℔ 30c net

Knives.
Ames' Butcher Knives.....dis 20 %
" Shoe " .....dis 15 %
" Bread " .....₩ doz $1 50—dis 15 %
Hay and Straw, "Wadsworth's".....dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives.....dis 25 %

Knobs.
Carriage.....dis 60&10 %
Base—Common.....net
" Plush Tip.....dis 10 %
" Elastic End.....reduced list dis 10&10 %

Ladles.
Melting.....dis 20 %

Lanterns.
Peerless.....dis 10 %
Brady's Patent.....dis 10 & 10 %
Etna.....dis 10 & 10 %
Yankee.....dis 10 & 10 %
De Beque.....dis 10 & 10 %

Lemon Squeezers.
Porcelain Lined.....per doz $7 00, dis 10 %

Lines.
Linen Fish.....dis 10&10 %
Cotton Chalk.....dis 40 %
Silver Lake Chalk.....dis 10&10 %
Mason's.....dis 10&10 %
Galvanized Wire Clothes.....$1 per 100 ft. dis 50 %

Locks and Latches.
Cabinet—Eagle.....dis 25 %
Cabinet—Gaylord.....dis 25 %
Langstroth & Crane.....dis 40 %
Trunk.....dis 25 %
Continental.....dis 15 %
Shepardson's.....dis 20 %
Romer's Padlocks.....dis 15 %
Scandinavian Jail.....dis 10 %
American Lock Co.....dis 33⅓ %
Plate.....dis 25 %
Pad.....new list dis 30, and 2 % for cash
Barnes & Deitz.....dis 25 %
Yale Lock Co.....dis 40 %
Sargent & Greenleaf.....dis 20 %
Trenton
Brunford
Norwich
Norwalk
Nashua
Mallory, Wheeler & Co.
P. & F. Corbin
Parker & Whipple
Jacobus & Nimick Mfg. Co. } New list dis 45 %, 2 % extra for cash.

Mallets.
Hickory and Lignumvitæ.....dis 20 %

Meat Cutters.
Dixon's (P. S. & W.).....dis 10 %

No.	1	2	3	4
₩ doz.	$14 00	$17 00	$19 00	$20 00

Hales'.....dis 25 %

No.	11	12	13
₩ doz.	$27 00	$33 00	$42 00

Miles Challenge.....dis 20 %

No.	1	2	3
₩ doz.	$22 00	$30 00	$40 00

Perry's Champion (P. S. & W.).....dis 10 %

No.	200	300	400
₩ doz.	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.).....dis 10 %

No.	100	150
₩ doz.	$15 00	$18 00

American.....dis 25 @ 25&5 %

No.	1	2	2½	3	4	B	5
Each	$6 00	$9 00	$12 00	$15 00	$30 00	$60 00	$75 00

Molasses Gates.
Stebbins'.....dis 65&10 %
Tinned ends.....dis 40&10 %
Patent Self-Measuring.....per doz $42 00—dis 20 %
Bush's.....dis 20 %
Lincoln's.....dis 50&10 %

Mortars and Pestles.
Iron.....net

Mouse Traps.
Wood Choker.....₩ doz holes, 15 @ 18c
Round, Wire.....₩ doz $1 50 to 2 00 net
Square, " .....₩ doz 2 00 to 2 50 net
Cage, " .....₩ doz 2 50, dis 10 %

Nails......See Trade Report

Nail Pullers.
Capewell's Giant.....per doz $30 00 net

Nuts and Washers.
Nuts.....large, 6c; small, 8c off list.
Washers.....large, 8c; small, 10c off list.

Oil Stones.
Washita No. 1.....₩ ℔ 22c
" Slips.....₩ ℔ 45c
Washita No. 2.....₩ ℔ 17c
Arkansas.....₩ ℔ 1 25
Hindostan.....₩ ℔ 6c dis 10&10 %
" Slips.....₩ ℔ 10c dis 10&10 %

Oilers.
Miller's Zinc.....dis 30 %
" Brass and Copper.....dis 25 %
Olmsted's.....new list dis 25&10 %
Broughton's.....dis 35&5 %
Malleable.....per doz $5 00 dis 10 %
Common Tin.....dis 30&10 %
" Zinc.....dis 30&10 %
" Brass and Copper.....dis 30&10 %
Prior's.....dis 30&10 %

Ox Shoes.
Concave.....₩ ℔ 13c net

Ox Balls......dis 60&10 %

Pencils
Rope's Carpenters'.....dis 30&10 %
Dixon's Lead.....₩ gross $4 50 net
" Lumber.....₩ gross 9 00 net

Picture Nails and Knobs.
Brass Head.....dis 60&10 %
Richards' Patent.....dis 40 @ 40&10 %
Judd's.....dis 60&10 %

Pinking Irons.....per doz $2 75—dis 65 %

Planes.
Auburn Tool Co.'s.....dis 30&10 %
Eneworth Bench.....dis 50 %
Chapin's, 1st quality.....dis 20&10&10 %
Chapin's 2d quality.....dis 45&10 %
Greenfield Tool Co.....dis 25&10 %
"New York".....net list
Sandusky Tool Co., 1st quality.....dis 35 %
" " 2d " (Ogontz).....dis 50 %
Ohio Tool Co., 1st quality.....dis 35 %
" " 2d quality (Scioto).....dis 50 %
Owasco Tool Co., 1st quality.....dis 3.&10 %
" " 2d quality.....dis 50 %
Howland's, 1st quality.....dis 30&10

Galvanized Telegraph, Nos. 10 and 11...₩ ℔ 10½c @ 11½c
" " 12.....₩ ℔ 10½c @ 11½c
Annealed Fence, Nos. 8 and 9.....dis 40 @ 45 %
" Grape, " 10 to 14.....dis 40 @ 45 %
Fence Staples.....₩ ℔ 8 @ 8½ %
Stubs' Steel Wire.....$7 00 to £ gold
Judd's Picture Wire.....dis 50 %

Wrenches.

American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 20 %
" Diagonal.....dis 20 %
Collins & Co.'s.....dis 45 %
Coes' Genuine.....dis 40&5 %
" Pattern (Wrought).....dis 50 %
" " (Malleable).....dis 60&10 %
Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 70 %
Davis' Patent Duplex.....new list dis 25 %
Bemis & Call's Patent Combination.....dis 20&5 %

Wringers.

Providence.....₩ doz $58 00
"Reliance" (P. T. Co.).....₩ doz 53 00
Universal—Extra.....₩ doz 58 00
Novelty.....₩ doz 58 00
Sherman.....₩ doz 58 00
Reliance.....₩ doz 58 00
Monitor.....₩ doz 58 00
King.....℔ doz 58 00
Crown.....℔ doz 58 00
Eureka.....₩ doz 58 00
Independent.....₩ doz 58 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 10 %.

COMMON STAMPED WARE, &c.

Bucket Covers.

	1	2	3	4
Quarts				
Inch	4½	5 5-16	6 5-16	6½ 7 11-16
Per gross	$2 00	2 60	3 40	4 25 5 75
Quarts	6	8	10	12
Inch	8½	9½	9½	10 9-16
Per gross	$7 00	8 00	8 50	11 50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12½	13½
Per gross	$15 00	18 00	22 00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾ 10¼
Per gross	$5 75	6 00	6 25	6 75	7 25 8 25
Inch	10¾	11¼	11¾	12¼	12¾ 13¼
Per gross	$8 75	9 50	10 00	13 00	13 75 16 50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10 11
Per gross	$4 00	5 00	6 00	6 50	8 50 10 50

Deep Pie Plates.

Inch	9	10
Per gross	$8 50	10 50

Jelly Cake Pans.

Inch	9	10
Per gross	$7 50	10 00

Coffee Pot Covers.

Plain	1¾	2	3	4	5	6 qts.
Inch	5	5¾	6¾	4¼	5	
Per gross	$1 15	1 40	1 60	2 00	2 75	3 00
Rimmed	2¾	3	3¼	4	4¼	Inches.
Per gross	$2 25	2 50	3 00	3 50	4 00	

T. K. Breasts only.

Inch	7¾	8	8¼	9	9½	10	10¾	11	11¼
Per gro.	$6 00	6 50	6 75	7 25	7 75	9 50	10 00	12 00	13 00

Grater Plates.

Sheet	¼	1
Per gross	$3 00	6 00 11 50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes	per gross, $8 00	11 50
With Tubes	" 10 50	14 00

Stamped Square Pans.

No.	¼	1
Per gross	$7 50	14 50

Common Square Pans (One sheet).

Per gross	$12 50

Milk Skimmers (Plain or Pierced).

Per gross	$4 00

Lettered Plates.

Inch	5½	6
Per gross	$3 25	4 00

Steamer Bottoms.

Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain	per gro. $4 50	5 00	5 50	6 00	6 50	7 50
Jap'd or Burn'd	" 6 00	6 50	7 00	8 00	8 50	10 00

Coffee Boiler Lips.

	Small.	Large.
To Rivet	per gross, $0 80	1 10
To Solder	" 1 25	

Plain Stamped Water Dippers,

	½ pint.	Pint.	Quart.	2 quarts.	2½ quarts.
Per doz	90	1 15	1 50	1 85	2 50

RETINNED WARE, dis 25 %.

Retinned Milk Pans.

Qts	½	1	1½	2	3	3½	4	5	6	8	10	12
Per doz	1 50	1 50	1 75	2 00	2 25	2 75	3 15	3 50	3 85	4 75	5 25	5 75

Dipper Bowls, Plain Stamped.....dis 20 @ 25 %

Pints	½	1	Quarts	1	2	2½
Per doz.	50	75	Per doz	1 00	1 25	1 75

Dipper Bowls, Retinned.....dis 20 @ 25 %

Pints	½	¾	1	Quarts	1	2	2½
Per doz.	75	95	1 05	Per doz	1 40	1 75	2 25

Pans.

Dish Pans, Tinned								dis 20 @ 25 %
Quarts	7	8	10	14	17	21	30	
Per doz	8 50	9 50	11 00	13 00	16 00	19 00	30 00	

JAPANNED TIN WARE.

Canisters, Common											dis 10 %
Pound	½		1		2		3				
Per doz	$1 10		1 60		2 50		3 25				
Canisters, Hinged											dis 10 %
Pound			1		2						
Per doz	$1 75		2 75		3 40		3 75				4 50
Candlesticks, Japanned											dis 10 %
No			1		2						
Per gross			$5 00		7 00						
Lace Board	Round		per nest, $2 25, dis 10 %								
"	Square		" nest, 4 25, dis 10 %								
Chamber Pails, Japanned (Smith, Burns & Co.)											dis 10 %
Nos	2		3		4		5				
Green, per doz	$8 00		9 00		10 50		12 50				
Oak "	9 50		10 50		12 00		13 50				
Dust Pans, Corrugated	per gross, $22 00, dis 10 %										
Box Graters	per gross, $4 00, dis 10 %										
Molasses Cups											dis 10 %
Pint	½		1		2						
Per doz	$1 25		50		2 75						
Lunch Boxes, per doz	1 in $2 00; 8 in. $2 50; dis 10 %										
Pepper Boxes Japanned											dis 10 %
Per gross	Small, $3 00; Large, $4 00										
Toy Banks, House											dis 0 %
Tea Trays, American Tea Tray Co											dis 15 %
No			1		2						
Per gross	$7 00		5 50								
Toy Banks Gothic											dis 10 %
No			1		2						
Per gross			$5 50								
Toy Cups, Straight											dis 10 %
No			1		2		3				
Per gross			$4 00		3 50		3 50				
Toy Cups, Flaring	No. 1, $4 75; 2, $3 70 ₩ gross, dis 10 %										
Toy Pails, Covered											dis 10 %
No							1				
Per gross							$4 50				
Toy Rattles	per gross, $2 25, dis 10 %										
Trunks, Wire Handled	per nest (5) $1 50, dis 10 %										
Spittoons, Tin	per gross, No. 2, $30, No. 3, $27, dis 10 %										

PLANISHED TIN WARE.

Planished Coffee Pots, Round								dis 25 @ 30 %
Each	60	75	85	95	1 15	1 25	1 30	1 40
Pints	1	2	3	4	5	6	7	8
Planished Tea Pots, Round								dis 25 @ 30 %
Each		70	80	95	1 05		1 25	
Pints		2	3	4	5		6	
Planished Tea Pots, Oval								dis 25 @ 30 %
Each		70	80	90	1 05	1 15	1 40	1 75
Pints	1	2	3	4	5	6	8	
Planished Pepper Boxes, No. 1	per doz., $1 52							
Planished Flour Dredges, No. 3, $2 10; 4, 2 45 ₩ dozen.								
Planished Round Coffee Biggins								dis 25 %
Pints	3	3	4	5	6	8		
Each	$1 00	1 10	1 20	1 40	1 60	2 00		
Planished Oval Coffee Biggins								dis 25 %
Pints	2	3	4	5	6	8		
Each	$1 15	1 25	1 40	1 60	1 80	2 25		
Planished Oval Chafing Dishes, Imperial Covers								dis 25 %
Inch	10	12	14	16	18	20	22	24
Each	$3 85	5 00	6 25	7 60	9 00	11 50	15 00	16 50
Planished Oval Chafing Dishes, Low Covers								dis 25 %
Inch	10	12	14	16	18	20		
Each	$3 25	4 35	5 20	6 20	7 20	9 25		
Planished Low Dish Covers								dis 25 %
Inch	10	11	12	14	16	18	20	
Each	$ 70	80	1 00	1 40	1 80	2 00	2 75	
Planished Imperial Dish Covers								dis 25 %
Inch	10	11	12	14	16	18	20	22 24
Each	$1 55	1 70	2 00	2 60	3 15	3 45	4 60	5 45 6 30
Planished Etnas, on Stands								dis 25 %
Pints	1½		2		3		4	5
Each	$0 90		1 00		1 20		1 50	1 75
Planished Liquor Mixers								dis 25 %
Nos	0		1		2			
Per doz	$2 00		2 10		2 45			
Planished Oval Melon Molds								dis 25 %
Nos	2	3	4	5	6	7	8	9
Each	$ 60	65	70	80	90	1 00	1 15	1 35
Planished Oval Tumbler Warmers								dis 25 %
To fit 1, 2, 3, and 4 O. G. Urns								each, $2 50
Planished Oval O. G. Urns								dis 25%
Nos	0	1	2	3	4	5	6	7 8
Each	$4 20	4 85	5 45	6 30	7 15	9 00	11 00	14 25
Planished Round Urns								dis 25 %
Nos	0	1	2	3	4	5	6	7
Each	$4 20	4 85	5 45	6 30	7 15	9 00	11 00	14 25
Planished Round Oyster Dishes, (Complete)								dis 25 %
Nos						1		2
Each						$2 10		2 80
Planished Oyster Dish Plates								dis 25 %
Nos						1		2
Each						$0 25		0 30
Oyster Dish Covers								dis 25 %
Nos						1		2
Each						$0 30		0 35

Tea Pot Handles—P. S. & W.....dis 30 %

Stow's Patent Hollow Tea Pot Handles.

No. 1, Small	4½ inches	per gross, $11 50
No. 2, Medium,	5½ "	" 12 50
No. 3, Large,	6½ "	" 13 50
No. 4, Ex. Large,	7½ in., for Wash Pitchers &c.	" 18 00

Stow's Patent. New Pattern.

No. 25, Small,	4½ inches	per gross, $11 50
No. 35, Medium,	5½ "	" 12 00
No. 45, Large,	6½ "	" 13 00

Solid Iron. Tin Tipped.

No. 10, Small,	4½ inches	per gross, $9 00
No. 15, Medium,	5½ "	" 9 50
No. 20, Large,	6½ "	" 10 75

Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.

No. 12, Bronzed and Tin-Tipped	per gross, $18 50

Saucepan Handles. Of Best Malleable Iron.

P. S. & W.....dis 30 %

Japanned.

No. 1, 5¾ inches long	per gross,	$3 50
No. 2, 6 "	"	3 75
No. 3, 6¾ "	"	4 00
No. 4, 7¾ "	"	4 25
No. 5, 8 "	"	4 50
No. 6, 9 "	"	4 75

Tinned.

No. 1, 5¾ inches long	per gross,	$4 25
No. 2, 6 "	"	4 50
No. 3, 6¾ "	"	4 75
No. 4, 7¾ "	"	5 25
No. 5, 8 "	"	5 50
No. 6, 9 "	"	5 75
Japanned	per lb.,	16
Tinned	"	20

Iron Kettle Ears (P., S. & W.).....dis 45 %

Half gross pairs in a package.

Tinned.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	85c	$1 00	1 50	1 75	2 10	2 25	3 50	4 75

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	85c	$1 35	1 50	1 75	2 25	2 75	4 00

Tinned Tea Kettle.

Nos	4	5	6
Per gross pairs	$1 75	2 10	2 75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos	1	2	3	4	5	6	7
Per gross pairs	$1 00	1 25	1 50	1 75	2 25	2 75	3 50

Malleable Iron Kettle Ears for Coal Hods, &c.

P., S. & W.....dis 20 %

No. 10 Small	₩ ℔, Tinned, 20c;	Black, 16c
No. 20 Medium	₩ ℔, " 20c;	" 16c
No. 30 Large	₩ ℔, " 20c;	" 16c
No. 40 Extra Large	₩ ℔, " 20c;	" 16c

In cases of 100 lbs. each.

Milk Can or Boiler Handles—(P. S. & W.) 4¼ in..dis 25 Plain, 8c.; Japn'd, 9c.; Tinned, 16c. per lb.; Malleable Clips or Ears to match, Tinned.....30c per lb.

Toilet Ware Handles—4¼ inches (P. S. & W.).....dis 35 %

Plain with drilled holes, per lb.....9c
Plain with Cast " "....8c

Plumbers' Scrapers—(P. S. & W.).....dis 25 %

Extra quality, length 6 in., per doz.....$4 00

METALS.

IRON.—DUTY Bars, 1 to 1¼ cents per lb., Sheet, Band, Hoop and Scroll, 1¼ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 2 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1¼ cents per lb.

Pig Iron—AMERICAN.

Foundry No. 1	₩ ton,	$27 00 @ 29 00
Foundry No. 2	"	26 00 @ 27 00
Gray Forge	"	23 00 @ 25 00
White and Mottled	"	

SCOTCH.

Coltness	"	40 00 @ 42 00
Glengarnock	"	39 00
Eglinton	"	37 00
Summerlee	"	

Bar Iron.

Am. Refined, at mill.....nominal.....₩ ℔ 2·8c

Rails.

Welsh, gold	₩ ton,	48 00 @ 50 00
American, at works, currency	"	52 00 @ 55 00
Old Rails, currency	"	30 00 @

Scrap.

Wrought Scrap.....

Bar Iron from Store.

Common Iron.	
¾ to 2 in. round and square	₩ ton, $ 67 00
⅝x9-16 in " "	" 70 00
½ in. " "	" 72 50
2¼ to 3 in. "	" 70 00
1 to 6 in. wide x ⅜ and 1 in thick	" 65 00
1¼ to 6 in wide x ¼ & 5-16 in. thick	" 70 00
1 and 1¼ in. x ¼ and 5-16	" 72 50
Swedish Iron.	
1½x⅜ to ⅝	" 140 00
1¾ to 5x⅜ to ⅝ and ¼ to 1¾ in. square	" 125 00
6 to 7x⅜ and ⅝	" 145 00
Refined Iron.	
¾ to 2 in. round and square	" 67 50
1 to 6 in. wide x ⅝ to 1 thick	" 67 50
1¼ to 6 in. wide x ¼ and 5-16 thick	" 72 50
1 and 1¼ x ¼ and 5-16	" 72 50
Large Rounds.	
2⅜ to 2¾, round and square	" 77 50
3, 3¼ and 3½ in.	" 82 50
3¾ and 4 in.	" 90 00
Rods—⅝ and 11-16, round and square	" 70 00
½ and 9-16, " "	" 72 50
7-16, " "	" 80 00
⅜, " "	" 85 00
5-16, " "	" 90 00
¼, " "	" 95 00
3-16, " "	" 127 50

Sheet Iron.

Nos.	American and English.	Common R. G. American.	R. G. English.
10 to 20	₩ ℔ 4¼ @ 4¾c	5½c	5¾c
21 to 24	" 4¾ @ 5c	6c	6c
25 to 26	" 5c	6c	6c
27	" 5¼c	6c	6¼c
28	" 5¼c	6c	6¾c

Galvanized, 1, to 20, prime, ₩ ℔ 10; 2d quality.....₩ ℔ 9c

"	21 to 24	"	"	11	" 10c
"	25 to 26	"	"	12	" 11c
"	27	"	"	13	" 12c
"	28	"	"	14	" 13c

Patent Polished.....15 @
Russia, Nos. 8 to 26.....₩ ℔ 18c
" Stained, No. 1....." 17c
Belgian....." 12c

One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON

24	5	5½	6	7 inch.
$2 00	3 50	4 50	5 25	6 50 per doz.

RUSSIA IRON.

5½	6	7	inch.
7 00	9 50	12 00	14 00 per doz.

BABBITT METAL.

Exceisior	cash, dis 10 %			
No	1	2	Extra.	
	10c	12c	15c	20c @ 25c

COPPER—DUTY Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.

American Ingot.....₩ ℔ 21¼c
English " "

SHEATHING, BRAZIERS COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	33c ₩ ℔
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	35c. "
Braziers' Copper, 12 oz. per square foot and lighter	39c. "
Circles less than 24 inch in diameter	35c ₩ ℔
Circles, 24 inch diameter and over	39c. "
Segment and Pattern Sheets	35c. "
Locomotive Fire Box Sheets	33c. "
Sheathing Copper, over 12 oz. per sq. ft.	31c. "
" 12 oz. ₩ sq. ft. and lighter	29c. "
Bolt Copper	33c. "
Copper Bottoms, 32 @ 33c. ₩ ℔	net

No Copper in Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier	35c. By the case, 33c. ₩ ℔
12 oz. and lighter	39c. " " 38c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60

14 and 16 oz. and heavier	38c. By the case, 37c. ₩ ℔

(And all sizes not over 20 inches wide.)

30x60

14 and 16 oz. and heavier	40c. ₩ ℔
12 oz.	43c. "

TINNING.

14x48, by the case	8c. ₩ sheet
14x48, less than case	10c. "
Boiler Sizes, 7 and 8 inch	12c. "
" 9 inch	15c. "
Other sizes not larger than 30x60	3½c. ₩ sq.
Larger than 30x60	3c. "

LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2¼ cents per lb. All subject to a reduction of 10 per cent.

Spanish	6½ @ 6¾c gold
German Refined	6½ @ 6¾c gold
English	6½ @ 7c gold
American	6¾ to 6¾c gold
Bar	dis 10 % 5½c.
Pipe	dis 10 % 8¾c.
Tin Lined Pipe	dis 10 % 10½c.
Sheet	dis 10 % 8½c.
Shot	dis 10 % Drop, 8¾c.; Buck. 9¼c.

SOLDER.....No. 1, 15c; No. 2, 13¾ @ 14c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 3¾ cents; over 7 cents, and not above 11, 5 cents per lb.; over 11, 3¾ cents per lb. and 10 % ad val. Railway Bars 1¾ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	15 @ 16c
Spring	10c
Homogeneous	12½c
Tire	12½ @ 13½c
Machinery (round and square)	10 @ 11c
File	11c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
" circular as to size	18 @ 30c

Chrome Steel.

Tool	₩ ℔ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ ℔ 12c and upward
Machinery	" 14c.
Hammer	" 15c.
Gun or Homogeneous	" 16c

English Steel,—payable in gold, dis 5 % cash.

"	Best Cast	₩ ℔ 18c
"	Extra Cast	" 19c
"	Round Machinery, Cast	" 11½c
"	Swaged, Cast	" 13c
"	Best Double Shear	" 13c
"	Blister, 1st quality	" 13½c
"	" 2d quality	" 11½c
"	" 3d quality	" 10½c
German Steel, Best		" 11½c
do	2d quality	" 10½c
Sheet Cast Steel, 1st quality		" 18c
"	" 2d quality	" 16c
"	" 3d quality	" 14c
File Steel, Flat and ½ Round		" 12½c
"	Square and Round	" 13c
"	Mill	" 13½c
"	Taper to 4 inch	" 17c
"	Taper 8 and 9¼ inch	" 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash.....6¾ @ 7c., gold
American " .....6¾ @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. —all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.

Banca	₩ ℔ 25 @ 25½c., gold
Straits	₩ ℔ 21¾ @ 22½c., gold
English	₩ ℔ 21¾ @ 22c., gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal		10·75 to 11·25
12x12,	"	11·75
14x20,	"	12·00
I X 10x14,	"	13·50
12x12,	"	14·00
14x20,	"	14·50
D C 12¼x17	"	10·75
D X 12¾x17	"	13·00
For each additional X add		2·25

COKE TIN PLATE.

	Best	2d Quality.	Ordinary.
I C 10x14	$10·50 @ 11·00	9·50 @ 10·00	9·00 @ 9·50
I C 12x12	11·00	10·50	
I C 14x20	14·25	10·50	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·00 @ 10·25	9·25 @ 9·75	7·75 @ 8·50
I X 14x20	12·50		
I C 20x28	20·00 @ 21·00	19·00 @ 19·75	16·50 @ 18·00
I X 20x28	26·00		
I C 20x30 ⅞	24·00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2¼c. ₩ ℔. All subject to a reduction of 10 per cent.

Sheet	cask 9¼c
"	open 10c

Paper Stock, Old Metals, &c.

(Dealers' Selling Prices.)

Canvas linen	6¼ @
" cotton, No. 1	6¾ @ 7
" " No. 2	@ 5
White linen rags, No. 1	6 @ 6½
" " No. 2	4¾ @
Colored	2½ @
Mixed woolens	@ 2½
Soft woolens	@ 5¼
Gunny bagging	1¾ @ 2
Jute Butts	2¼ @ 2¾
Kentucky bagging	5¼ @ 5¾
Book stock	4 @ 4¾
Waste paper and scraps	1 @ 1½
Rope cuttings	1½ @ 3
Kentucky Bale rope	4 @ 4¾
Oakum junk, No. 1	5½ @ 5¾
" No. 2	@ 4
Grass rope	3¾ @ 4
Tarred Shaking	1¾ @
White Collar Cuttings, all paper	7 @
" " muslin lined	5 @
" Envelope "	7 @
Hard White Shavings, No. 1	6¾ @
Soft " No. 1	@
White Shavings, No. 2	5¾ @ 6
Mixed Shavings, part white	4 @ 4¾
Imperfections, No. 2, best folded sheets	5 @
" 1, Heavy Stock	4¾ @ 5
Book Stock, Mixed	3½ @ 4
" " No. 2, light	2 @ 2¾
Prints	1½ @ 2
Pure Manilas	2
Bogus Manilas and Hardwares	1 @ 1¾
Commons	1 @
Binders' Board Cuttings	1¾ @ 2
Straw Board Cuttings	1¾ @ 1¾

Old Metal.

Copper	@ 20
Yellow metal	14 @ 15
Brass	13 @ 14
Heavy Composition	17 @ 18
Old lead, solid	5¾ @ 6¼
Tea lead	4½
Wrought iron	1½ @ 1¾
Sheet iron	0¾ @
Cast iron	1 @ 1¾
Machinery iron	1¾ @
Zinc	
Pewter, No. 1	17
" No. 2	10 @ 12
Spelter	5¾ @ 6

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ℔ 30c
" " Ordinary	6c
" Ivory Drop, fair	15c
" " best	26c
Black Paint, in oil	kegs, 8c.; asst'd cans, 11 c
Blue, Prussian, fair to best	50 @ 75c
" " in oil	35 @ 65c
" Chinese, dry	33c
" Ultramarine	25 @ 30c
Brown, Spanish	1¾c
" Van Dyke	3c
Carmine, 40	$12 00
Green, Chrome	15 @ 25c
" in oil	18 @ 25c
" Paris	good, 30c; best, 40c
" " in oil	" 30c " 45c
Mineral Paints	1¾ @ 4c
Orange Mineral	14½c
Red Lead, American	9¼c
" " English	10½c
" Venetian (N. C.) dry	2¾c
" " in oil	asst'd cans, 11c; kegs, 8¾c
" Indian, dry	10c
Rose Pink	13c
Sienna, American, Raw	4c
" Burnt	11½c
" " in oil	16 @ 20c
" Raw	15 @ 25c
Umber, Burnt	4 @ 8c
" " in oil	16 @ 21c
" Raw	3½ @ 7½c
" " in oil	16 @ 22c
Vermillion, Chinese	
" English	1 90
" Trieste	1 65
" American, Common	25c
White Lead, American, pure dry	10¼c
" " in oil	11¾c
White, Paris, English, prime	in bbls. 2¾ @ 2¾c
Yellow Ochre, French	2½ @ 2¾c
" " in oil	asst'd cans, 11c; kegs, 8½c
" " Vermont	in casks 1¾c
" Chrome	17 @ 21c
" " in oil	18 @ 25c
Zinc White, American No. 1 dry	9c
" " 1, in oil	11c
" " French (Paris)	11 c
" " in oil	12 c

Oils.

Linseed Raw	₩ gal. casks, 79c. bbls. 80c
" Boiled	" 81c. " 83c
Whale, Crude	
" Bleached Winter	
Sperm, Crude	1·85
" Winter unbleached	1·85
" " bleached	1·90
Seal, Extra Refined	
Lard, Pure Winter	
" Spring	1·00
Cotton Seed, Crude	60c
" Southern Yellow	65c
" White	
Neatsfoot, Winter	70c @ $1·10
Natural Lubricating	38c @ 40c

Sundries.

Asphaltum	8c
Benzine	₩ gal. 14c
Chalk	1¾c
" Block	
Dryer, Patent, Am'n	ass't cans, 10¾c.; kegs 9c
" " English	" 11c.; " 9c
Flocks	
Frostings	30c
Glue, White	33 @ 47c
" Sheet	23c
Glaziers' Points, Zinc	9c
Gum, Copal	35c
" Damar	25c
" Shellac, English	60c
" " dark	50c
Litharge	10c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	4c
Putty in bladders	3½c
" in bulk	3c
Rotton Stone, soft, English	8c
Spirits Turpentine	38c
Whiting, Spanish	1c

Glass.

French Windows—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

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SIZES.	I.	II.	III.	
6 x 8 to 10 x 15	$10·25	$9·25	$8·75	$8·00
11 x 14 to 16 x 24	12·00	11·00	10·00	9·50
18 x 22 to 20 x 30	15·00	13·50	12·00	10·50
15 x 36 to 24 x 30	17·50	15·25	12·50	

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FOR
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is "Nature's Compound" of Copper, Mercury, Lead and Iron. A pure Oxide of Metals, containing no earthy matter, hence we claim and are prepared to *prove* that it is the Best and Cheapest Paint in the market. Properly mixed, we will guarantee it to cover double the surface and wear twice as long as ordinary paints. It will not Peel, Scale, Crack or Blister, though subjected to high degrees of heat. It will effectually Prevent the Corrosion of Metals, even in mid ocean. Warranted superior to red lead or any other lead, for any and all purposes for which paint is required. Please send for circulars.

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ROP PRESSES

Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal) is of that class in which the Hammer is raised by a strap belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C. STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place, to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required, work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the board from touching either roll and prevents the same from being worn uneven.

Manufactured only by the

Stiles & Parker Press Co.,
MIDDLETOWN, CONN.

L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

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Worcester, Mass.

Established in 1839.

Registered March 31, 1874.

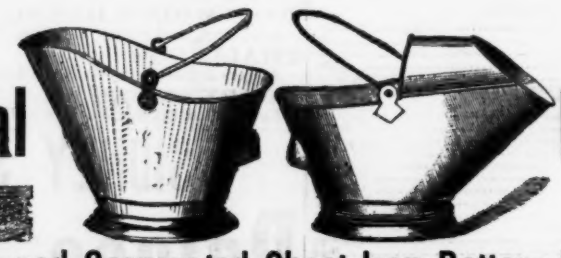
We invite the particular attention of the trade to our New Straight Bar Wrench, *widened,* full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact,* that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes, which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality.* Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

"L. COES & CO."

Warehouse, 97 Chambers St., & 81 Reade Sts., N. Y.
HORACE DURRIE & CO., Sole Agents.

Coal  **Hods.**

Stamped Corrugated Sheet Iron Bottom Riveted.

We manufacture six styles having our patent corrugated bottom, and all having the body bottom and hoop riveted together. Dealers before buying will find it to their advantage to get our prices, and also to beware of a seamed hod that is in the market, somewhat similar in shape to ours. Don't buy any but the **Corrugated Riveted Bottom Hod,** manufactured by

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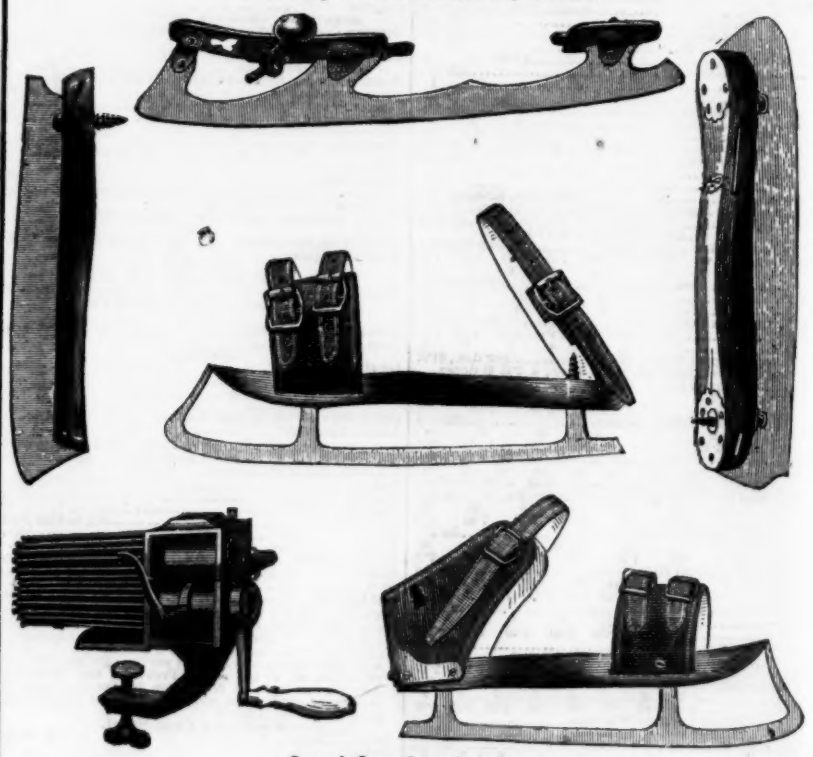

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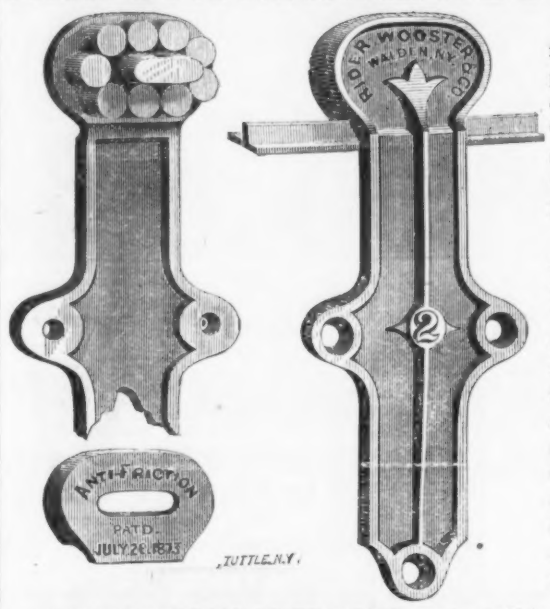
Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

Anti-Friction Barn Door Hanger



This Hanger is entirely new in principle and design, and possesses marked advantages over all others, entirely obviating all the defects and annoyances hitherto experienced in the use of ordinary sheaved hangers.

In construction it is exceedingly simple, as will be seen by the cut. The weight of the door is supported by a strong stud, between which and the rail is a series of chilled iron rollers, inclosed by the front of the hanger and cap, and as these rollers pass under the stud, they are returned over it in succession. There is consequently no friction, except that of rolling surfaces. Its leading advantages are:

GREAT DECREASE OF FRICTION, moving (as determined by direct experiment) with **one-fourth the power required by any other Hanger in the world.**
Great Strength. Unlimited Durability.
No Axles and Sheaves to grind and break.
All bearing surfaces harder than steel.
Thorough protection from the weather.
It will not clog with snow and ice.
It cannot run off the track.
It causes the door to run perfectly true.
It cannot get out of order.
It is compact, Simple and Beautiful in design.

This Hanger will fit any ordinary rail, but our rail is preferable, from the fact that it has a double flange at the bottom, so that the screws will not work out and allow it to rock or tip over.

No. 1 Hanger, corresponding to 4, 5 and 6 in. Sheaves or Rollers.....per pair, $1·25
No. 2 " " 6 inch and upward..... " 1·50
One Dozen Pairs in each case.—dis 30 per cent.
RAIL, with Double Flange.....per foot, 7 cents.
200 *feet in each case.*—dis 30 per cent.

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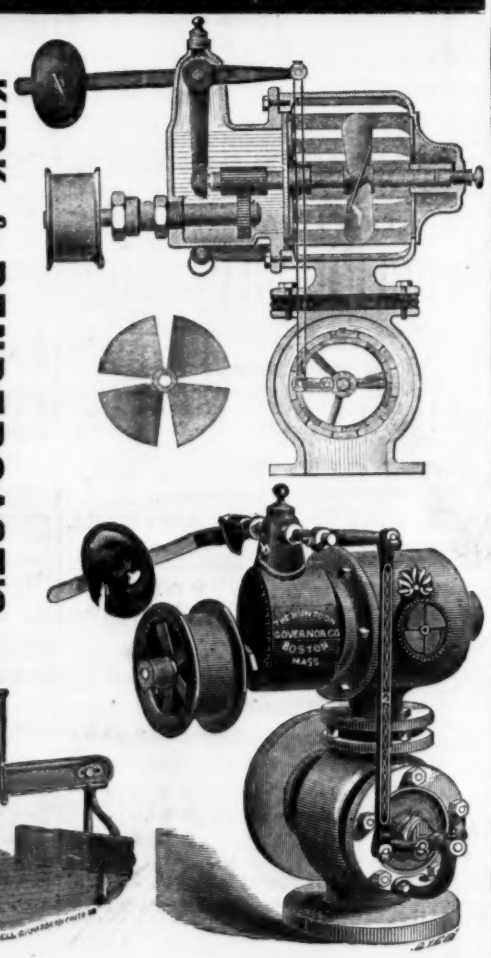

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This Tool Opens easily all Tin Packages of

FRUIT, VEGETABLES, OYSTERS OR FISH.

Is Warranted for Perfect Manufacture and Utility.

Direct all correspondence to the **Sprague Can Opener Co., Rochester, N. Y.** Goods delivered in New York, Philadelphia, Boston and Chicago.

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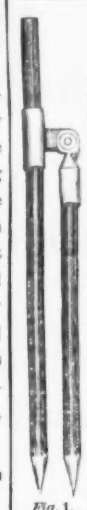

The following cuts represent a simple contrivance, for which Letters Patent were granted Feb. 24th, 1874. It consists of a metal joint by which two ordinary Lead Pencils may be connected together so as to form a pair of Dividers which may be used for all the purposes to which Dividers are applicable in ordinary Drawing, and which have the advantage of being lighter and cheaper than anything else in the market which will do the same work.

Fig. 1 shows it as applied to a pair of pencils, and Fig. 2 represents a steel point, connected with a spring socket, which may be slipped over the point of either of the pencils thus forming a pair of steel pointed dividers.

Hardware Dealers will find this a very salable article, as it is useful not only to Architects, Engineers and other Professional Draughtsmen, but to all classes of Mechanics:

WHOLESALE PRICES TO DEALERS.

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Instrument with 2 Pencils and one steel point.....	$8·00	$33·00
Joint only, without Pencils	1·50	16·50
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Sample dozen instruments with points sent free by mail for $2.

Goodnow & Wightman,
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Wholesale Agent wanted in New York, Philadelphia and Chicago, to introduce this instrument to the trade.

Fig. 1. *Fig. 2.*

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Steam Pumps,

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No auxiliary valves used. Direct connection between piston rod and valve movement. No knocking or jarring. Circulars and price lists sent upon application.

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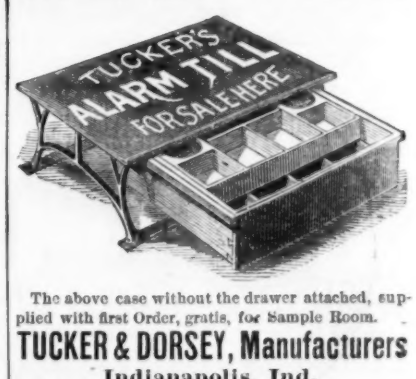

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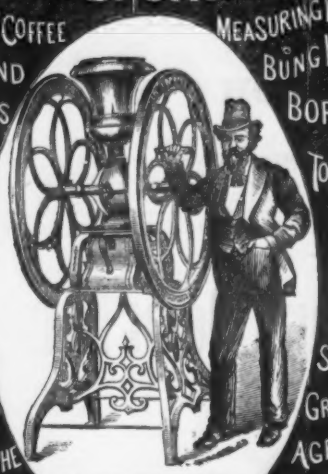

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CHEESE KNIVES
MOLASES GATES
MADE BY THE ENTERPRISE MFG CO

SAW SETS &c &c.
GRAHAM & HEINES
AGENTS
88 CHAMBERS ST N.Y.

PHILADELPHIA.

WHEELING HINGE CO.,

Wheeling, West Va.,

Manufacturers of

Wrought Butts, Strap & T Hinges, Wrought Hooks, Hasps & Staples, Wrought Repair Sinks & Washers,

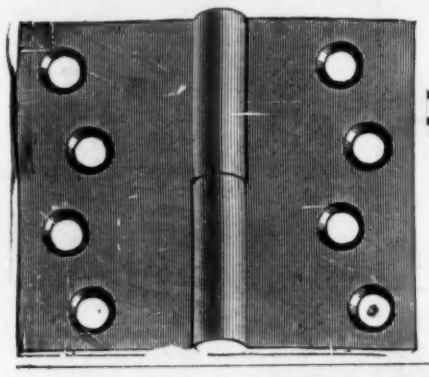
GRAHAM & HAINES, Sole Agents, 88 Chambers Street, N. Y.

AMERICAN BUTT CO.,

PROVIDENCE, R. I., Manufacturers of

Cast Butt Hinges,

AND



BUILDERS'

HARDWARE.

New York Warehouse with

Messrs. GRAHAM & HAINES,

No. 88 Chambers Street.

Send for Price List.

All kinds of

SMALL CASTINGS

Made to order.

Headquarters for

Henry Disston & Sons' Saws,

Hand, Mill, Circular and Cross Cut.

ALSO,

Plumbs and Levels, Try Squares, Gauges, Trowels and Barker's Reversible Butt.

A full assortment constantly on hand. Address orders to

GRAHAM & HAINES, 88 Chambers Street, N. Y.

CENTENNIAL
SELF-LUBRICATIVE

Hemp Piston Packing

FOR

Locomotives, Steamships, Stationary Engines, Hot or Cold Water Pumps.

Recommended by Master Mechanics and Engineers, as the cheapest and best in market. **No more Extortionate Prices. No more Fluted Rods**—but a good article at fair price.

JOHN CANFIELD & CO.,
SOLE MANUFACTURERS,
Office, 1321 Fairmount Ave., Phila.

PATENT APPLIED FOR. Send for Circular.

'SCANDINAVIAN SECURITY PAD LOCKS."

The best and handsomest locks in the market. The Case and Cap are made of malleable iron, and the shackle case hardened. Prices lower than on any other lock *with shoulder on shackle upon the market.*

G. N. STEARNS & CO., Syracuse, N. Y.

New York Agents, HUBBARD & CURTISS MFG. CO., 82 Chambers St.

COBB & DREW,

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Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Glimp Tacks; Finishing, Hungarian, Trunk Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

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HARDWARE.
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SAMUEL LORING'S

PLYMOUTH TACK AND RIVET WORKS

PLYMOUTH, MASS., manufacturer of

TACKS, BRADS, NAILS AND RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet Brush, Lace and Gimp Tacks; Finishing, Hungarian, 2d, 2d and 3d Fine, Trunk, Clout, and Cigar Box Nails; Black and Tinned Trunk Nails; Zinc, Iron, Copper and Steel Shoe Nails; Brads and Patent Brads; Glaziers' Points &c., &c., &c., COPPER, BRASS AND IRON RIVETS, of all kinds. Coopers' Rivets, from 1d to 6d, in casks of 100 lbs. each. Hose, Belt and Shoe Rivets and Burs. Oval and Countersunk Heads of extra lengths, made to order. SHIP AND BOILER RIVETS OF ALL SIZES AND LENGTHS

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CONTINENTAL LOCKS,

Made of Wrought Iron or Brass, very superior quality, and only an auger used in mortising.

SCHWEITZER PAD LOCKS,
EXCELSIOR COMPASSES.
EXCELSIOR DIVIDERS,

WITH

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Best and Cheapest Goods in the market. Sole Agents for the United States for

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French Coffee Mills.
NOBLE MFG. CO., Tools, Ship Augers, &c.
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We also make a superior

AXE. { "Queen of the Forest," "Wood Chopper's Pride," &c

Disston's Saws. (Largest stock in the City).

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AM. TEA TRAY WORKS,
GREENWICH, N. Y.
TIFFT & HOWARD, 12 MURRAY ST.

SOLE AGENTS IN NEW YORK.

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Manufacturers of Family Grindstones,
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TIFFT & HOWARD, 12 MURRAY ST.

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MANUFACTURERS OF

GAS AND KEROSENE STOVES,

AND PATENTED SPECIALTIES IN

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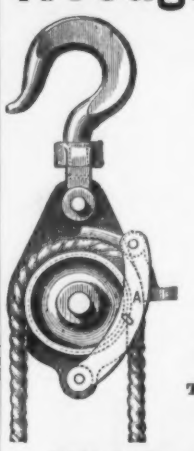
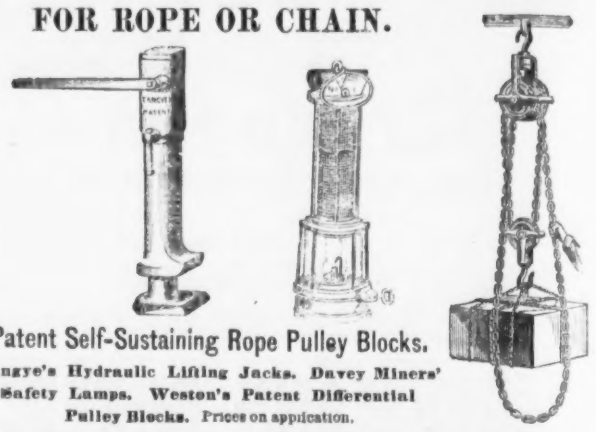
12 Murray Street.

Wrought Iron Tackle Blocks,

FOR ROPE OR CHAIN.





Patent Self-Sustaining Rope Pulley Blocks.

Tangye's Hydraulic Lifting Jacks. Davey Miners' Safety Lamps. Weston's Patent Differential Pulley Blocks. Prices on application.

VAN WART & McCOY, Sole Agents, 43 Chambers Street, N. Y.

The Hart, Bliven & Mead Mfg. Co.,

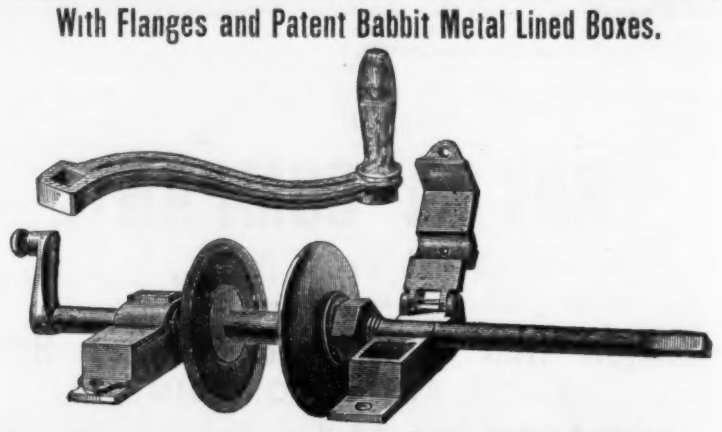
18 & 20 Cliff Street, and 243 & 245 Pearl Street, New York.

Factories at KENSINGTON, CONN.

MANUFACTURERS OF

GRINDSTONE FIXTURES.

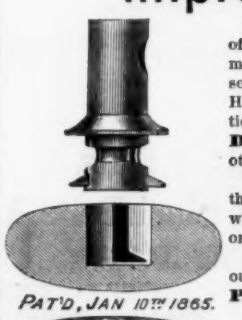
With Flanges and Patent Babbit Metal Lined Boxes.



The Boxes are covered and rendered entirely free from dirt. Being Anti-friction they combine all the advantages of the Anti-friction Rollers, and are cheaper in price.

Send for our Catalogue and Appendix. Price $4·50, and charge remitted on receipt of subsequent orders.

Improved Door Knobs.



On the 10th January, 1865, we obtained Letters Patent for improved method of securing necks to Mineral and Porcelain Door Knobs, which improvement was used by us long enough to prove its utility, but on account of unsettled claim of joint ownership by former partner, its use was discontinued. Having now made a further improvement, for which we have made application for a Patent, we are now making the **BEST SECURED** and **MOST DURABLE** Mineral and Porcelain Door Knobs ever offered in this or other markets.

We solicit orders for these Knobs at our regular prices for old styles, with the understanding that if any can be loosened from or gotten off the necks without breaking the tops, they may be held by the purchaser subject to our order, with expenses added.

See *The Iron Age*, of August 21st., page 11, for illustrated description of our patent **Telescope Locks and Latches**, with patent Flat **Steel Perforated Keys.**

Address

BRANFORD LOCK WORKS,
Branford, Conn.

Or, THE HART, BLIVEN & MEAD MANUFACTURING CO., Agents,
18 & 20 Cliff and 243 & 245 Pearl Streets. New York

NEWCOMB BROS.,

Manufacturers of

Smiths', Moulders' and Hand

BELLOWS.

For further particulars send for descriptive circular and price list

586 Water St., near Montgomery N. Y

J. CLARK WILSON & CO. Agents, 81 Beekman Street, New York.

Easily Applied and not Liable to get out of Order."—From Report of Judges at American Institute Fair, 1872.

The Challenge Door Spring Co.,

Patented. Exclusive Manufacturers of the [March 1873

In Appearance the Most Beautiful. In Action the Most Graceful. In Use the Most Reliable.

The Challenge Springs are manufactured from **Steel Wire, tempered by an Improved Process**, the result of repeated experiments, and must not be classed by dealers with the numerous worthless "Coil Springs" made from common **Bed Spring** Wire.

No. 49 Ann Street, NEW YORK.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ ℔ 14c
Peter Wright's.....₩ ℔, gold, 12½c
Wilkinson's.....11½c
Eagle.....11 cents currency—dis 15 @ 15&5 %
Apple Parers.—Union.....per doz $6 50 net
Skeleton..... " 6 50 net
Victor..... " 6 75 net
Domestic..... " 7 00 net
Reading..... " 7 00 net
Bay State Paring, Coring and Slicing.. " 12 00 net
" " Peach Parers..... " 10 50 net
Axes.—Mann's Light.....Per doz. $13 00 @ 12 50
Hunt's Light..... " 13 00 @ 12 50
Red Indian, all sizes..... " 12 50 @ 12 00
Red Chiertain, all sizes..... " 13 00 @ 12 50
Crown Prince..... " 13 50 @ 13 00
Augers and Auger Bits.—Pierce's Pat. Twist Bits.....dis 25 @ 30 %
Douglass' & Ives' Bits.....dis 30&10 %
Connecticut Valley Auger Bits .....dis 35&10 %
Coog s Bits.....dis 40&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 30&5 %
Douglass' & Ives' Augers.....dis 30&10 %
Watrous' Ship Augers.....dis 10 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—Landers, Frary & Clark's....dis 20 @ 22½ %
Chattillon's.....dis 20 @ 22½ %
Morton's.....dis 20 @22½ %
Common Spring with Hook..... ₩ doz $1 35 @ 2 00
Bells.—Ievin Bros. Mfg. Co. Light Hand Bells.....dis 60&10 %
Other makers light.....dis 65&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50 %
Great Western and Kentucky Cow.....dis 30&10 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 15 @ 20 %
Douglas Mfg. Co., complete with augers..dis 15 @ 20 %
Common Boring Machines, no Augers.....$4 25 @ 4 00
Angular " " ..... 5 25 @ 5 00
Bolts.—Eastern Carriage Bolts .....special prices
Western " " .....
Philadelphia " " .....dis 50&5 @ 50&10 %
" Eagle, (Coleman's).....dis 50&5 @ 50&10 %
Wrought Snutter.....dis 50 @ 50&5 %
Braces.—Barber s.....dis 40&5 %
Rackus.....dis50 %
Bartholomew s American Ball.....dis 10&10 %
Sponard.....dis 40 @ 40&5 %
Butts.—Cast Fast Joint, Narrow.....dis 30 %
" " Broad.....dis 50 @ 50&5 %
Cast Fast Loose Joint.....dis 50 @ 50&5 %
" Acorn, Loose Pin.....dis 50 %
Wrought Loose Pin.....dis 35 %
" Table Hinges and Back Flaps.....dis 40 %
" Narrow.....dis 30 %
" Loose Joint.....dis 35 %
" Reversible.....dis 35 %
Parker's Blind Butts.... } Discount 50 % by the case
Sheperd's " .... } 50&10 %.
Clark's " .... }
Cherrytree " .... }
Lull & Porter's Blind Butts .....dis 45&50 %
Chains.—German Halter.....dis 15 @ 20 %
" Coil.....dis 15 @ 20 %
Galvanized Pump.....₩ ℔ 15c
Best Proof Coil Chain—

₩ ℔..	13½	10¾	9½	9	8¾	8½	8c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 500 lbs., discount ½c per lb. Common Chain, ¼c per lb. less than proof.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
" Tang.....dis 40 @ 40&10 %
Beaur's Framing and Firmer.....dis 10 @ 15 %
Casters.—Porcelain Wheel.....dis 40&10 %
Iron and Brass Wheels.....dis 40 %
Iron Bed.....dis 40 %
Clothes Wringers.—Universa.....per doz $58 00
Novelty..... " 55 00
Monitor..... " 53 00
Discount in 2dozen lots. $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 10 @ 15 %
Patent Box and Side.....dis 10 @ 15 %
Cutlery.—American Pocket (Best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices
Drawing Knives.—Hart Mfg. Co.'s ..dis 60 @ 60&10 %
Concave Adjustable Handle.....dis 10 %
Beatty.....dis 10 @ 15 %
Fry Pans.
Tinned.....dis 20 %

₩ doz..	$3 00	3 25	3 62	4 00	4 50	5 00	5 50	6 00	7 50
No.....	0	1	2	3	4	5	6	7	8

Burnished.

₩ doz..	$2 50	3 00	3 38	3 75	4 12	4 50	5 00	5 62	6 75
No.....	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files...new list, $5 00 to £ cur dis 12½ %
" Bastard..... " 5 00 to £ cur dis 12½ %
" Taper..... " 5 00 to £ cur dis 12½ %
Butcher's Mill.....$5 50 to £ gold
" Bastard.....5 50 to £ gold
Taper.....5 50 to £ gold
Fluting Machines.
K. F. M.—4½ in. rolls, $5 50.....dis 10 %
" —6 in. rolls, $6 65.....dis 10 %
Mrs Knox—4 in. rolls, $5 50.....dis 10 %
" —6 in. rolls, 6 65.....dis 10 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Hammond & Son's.....dis 15 %
Verce.....dis 15 %
Hatchets.
Beatty's.....dis 10 @ 15 %
Shingling and Half. { ₩ doz.. $7 00 7 50 7 75 8 00 / No..... 1 2 3
Yerkes & Plumb.....dis 15 %
Shingling and Half. { ₩ doz.. $7 00 7 50 8 00 8 50 / No..... 1 2 3 4
Claw.... { ₩ doz..... $7 50 8 00 / No..... 1 2 3
Hinges.—Strap and T.....dis 40 %
Parker's Blind..... } Discount 50 %. By the case
Shepard's " ..... } 50&10 %.
Clark's " for wood.... }
Cherrytree Blind for wood. }
Lull & Porter's Blind.....dis 40&10 %
" .....by the case dis 5) %
Clark's Mortise Blind.....dis 40 %
Horse Nails. Nos. 5 6 7 8 9 10
Ausable..... 27 25 24 23 22
Globe..... 28 26 25 24 23
Brundage..... 26 24 23 22 21
Nos. 5 6 7 8 9 10
Putnam..... 32 28 26 25 24 23
On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 45 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 50 %
Scandinavian Pad Locks.

₩ doz.....	$10 50	10 50	12 00	12 00	15 00	15 00	} dis 15 %
No.....	9	9½	10	10½	11	11½	
₩ doz.....	$18 00	18 00	22 00	22 00	} dis 15 %		
No.....	12	12½	13	13½			

Trunk Locks.....dis 5 @ 10 %
Thumb and Reggens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 60 @ 60&10 %
Lincoln's " .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets.....dis 20 @ 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 10 %
Woodruff.....dis 10 %
Stowe.....dis 10 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co.. "Beach ". dis 35 @ 55&5 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Plumbs and Levels.
Stanley Rule and Level Co.....dis 60&10 %
Wm. Johnson. (Stanley List).....dis 60&10 %
Rakes.—Cast Steel Garden.....dis 33⅓ %
Malleable Garden.....dis 33⅓ %
Wood Head Iron Teeth.....dis 30 @ 40 %
Rules.—All Maker's Boxwood...dis 60&10 @ 60, 10&10 %
All Makers Ivory.....dis 50 %
Steelyards.—American Pattern.....dis 15 %

₩ doz.....	$5 50	7 00	9 00	10 00	11 00	12 00
No.....	50	100	150	200	250	300

English Pattern.....dis 15 %

₩ doz.....	$7 00	8 67	10 67	12 67	14 67	16 67
No.....	50	100	150	200	250	300

L. F. & C. Excelsior.....dis 10 %

₩ doz.....	$9 00	10 00	12 00	15 00	18 00	21 00
No.....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $11 00 net
Clipper No. 10, Boxed and Sharpened.....₩ doz $10 50
" 5, " " " 10 00
Common Scythes.....₩ doz $7 00 @ 10 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 12½ %
Disston's Hand.....dis 12½ %
W. McNiece's H'd, Cross-Cut & Cire'r, new list. dis 15 %
Boynton's Lightning, new list.....dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Sept. 1st.....dis 30 %
" Back Strap " .....dis 30 %
Oliver Ames & Sons.....new list dis 12½ %
Bradv Shovel Co.....dis 12½&5 %
Sad Irons.—Richmond (polished face) per lb. 4 c. net
Richmond (polished face)... by the cask " 3½ c. net
Stone.—Arkansas Oil, No. 1..... ₩ ℔ $1 25
Turkey Oil, No. 1..... " 1 00
Washita Extra..... " 30c
" No. 1..... " 22c
" " 2..... " 18c
" " 3½c
Screws.—Iron.....new list, Jan. 1st, 1874, dis 52½ %
Brass.....dis 52½ %
Spoons.—
Plated.....dis 40&5 %
Britannia.....dis 40&10 %
German Silver.....dis 20 %
" Light.....new list dis 15&5 %
Lalance & Grosiean Iron.....dis 10 %
Stocks and Dies......dis 15 %
Stove Polish.—Gem.....₩ gross, $3 00
Onyx..... " $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 12½ %
" " by the case...dis 12½&7½ %
Clout and Finishing Nails.....7½ %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 %
Vises.—Solid Box.....₩ ℔ net 15c
Wrenches.—Coes Genuine.....dis 40 %
Coes Imitation Wrought Bar.....dis 50 %
" " Malleable Bar.....dis 60 %
" " (Kellogg) Malleable Bar.....dis 50 @ 10 %
Tafts Pattern (Wrought Bar).....65 %
" " Kellogg's (Nail Bar).....dis 65&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....dis 40 %
No. 19 to 26.....dis 45 %
No. 27 to 36.....dis 45 @ 47½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 20 %
Galvanized Wire No. 0 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Sept. 12, 1874.

Augers—Snell Mfg. Co.....dis 20 %
Bits, Auger—Snell Mfg. Co.....dis 20 %
Bells, Cow—Yaw s Genuine.....dis 30 %
Bolts—Carriage and Tire.....dis 75&10 %
Braces—Bit, Spofford's Patent.....dis 40&5 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 25 %
Wrought Narrow.....dis 30 %
" Broad, Loose Jcint.....dis 35 %
" Table and Back Flaps.....dis 30 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 50 @ 35 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 50
" Rutherford ".....$1 00
Chalk—White, Carpenter s .....₩ gross, 50c
Red, Carpenter's ..... " 75c
Blue, " ..... " 90c
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castinge—Malleable .....₩ ℔ 10c
Clothes Wringers, "Novelty" No. 2.....₩ doz $58 00
Elbows—Corrugated..... 5 5½ 6 7
Charcoal.....$3 50 4 50 5 25 6 50 } dis 10 %
Russia..... 7 00 9 50 12 00 14 00 }
Files—Malschoss Bros.....dis 50 %
Freezers Ice Cream—" Champion .....dis 33⅓ %
Hammers—Henry W. Kip's.....dis 7½ %
Hinges—Window Blind—
Clark's.....dis 50&10 %
Shepard's and Standard.....dis 55&10 %
Wrought Strap and T.....dis 55&10 %
Hods, Coal—Plain, Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Palace Coal Vases.....dis 10 %
Hooks and Staples—Wrought.....dis 10 @ 10 %
Hooks—Belt .....dis 60&10 %
Hasps and Staples—Wrought.....dis 50&10 %
Sad Irons.....dis 60&10 %
Kettles—Brass.....4c
Enameled.....₩ ℔ 50c
Knives, Drawing—Oval No. 1.....dis 50&5 %
Razor Blade.....dis 60&10 %
Lanterns "Peerless,".....No. 1 5 10
₩ doz $36 00 $10 50 $13 75 dis 10 %
Tubular.....
" with Guards.....
Machines—Apple Paring, "Turn Table".....8 00 ₩ doz
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 15 %
Nails—Clout and Finishing.....dis 20 %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed.....add 1c ₩ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 5 7 8 9 10
22 20 19 18 17c
Packing—Rubber.....dis 30 @ 35 %
Pencils, Slate—Soapstone.....dis 20 %
30 40 50c. ₩ 100
Case lots.....
Paint—White Lead, U. S. Gov't.....₩ ℔ 9 c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Rope—Manilla, ½ inch and larger.....₩ ℔ 15½c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 52½ %
Flat Head, Brass.....dis 52½ %
Staples—Blind, Boardman s Pat., ½ & ⅝.....₩ ℔ 37c
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 40&10 %
Britannia.....dis 45&10 %
Squares—Steel and Iron.....new list 50 %
Shoes, Horse—H. Burden & Sons.....₩ keg 36 00
Saws—Henry Disston & Sons.....dis 10 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vises—Parallel, Buffalo.....dis 20 %
Ware—French, Tinned ana Iron.....dis 25 %
Stamped ana Japanned.....dis 10 %
Cast Iron Hollow.....dis 33⅓ %
Tin Plates.—Add for each X.....2 50
10x14, IC. Charcoal...$11 25 . 14x20 C. terne.....$10 25
12x12, " ... 11 75 | 20x28 C. " 21 50
12½x17, " ... 10 75 | 20x28 X. " 30 00
14x20, " ... 12 25 |
Pig Tin—Straits.....28c @ 29c
Bar Tin.....30c
Solder.....No. 1, 15c ; No. 2, 14c
Sheet Zinc—
" Lasalle ".....570 ℔ casks
$10 00 10 50 ₩ 100 ℔
Sheets.....$10 00
Iron Wire—Bright and Annealed.....dis 40 %
Coppered.....dis 35 %
Tinned.....dis 15 %
Tinned Broom, { Nos. 20 21 22 / 20c 21c 21c } .....dis 20 %
Copper—Sheathing 14 @ 18 oz.....₩ ℔ 33c
Planished..... ₩ ℔
Bottoms.....₩ ℔ 33c
Bolts.....₩ ℔ 35c
Braziers' Sheets.....₩ ℔ 37c
Sheet Iron.—
18 Common.....$4 95
24 Common.....5 25
24 W. D. Wood & Co., Smooth Finish.....5 90
Am. Russia..... A. B.
15c 12c
Gen. Russia, No. 1 stained.....18c
" " clean.....19c
Galvanized.....dis 15 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$11 50 @ 12 00
I. X. 10x14 Charcoal..... 14 50 @ 15 00
I. C. Terne 14x20..... 10 00 @ 13 25
I. C. Terne 20x28..... 21 50 @ 25 50
I. C. Continuous..... 24 00
Block Tin.—
Pig.....₩ ℔ 27c @ 29c
Solder.—
S. & Co.....₩ ℔ 23c
Lead.—Pig.....₩ ℔ 7½c.
Copper.—
Ingot.....₩ ℔ @ 24c
Planished.. " @ 36c
Sheathing.. " @ 33c
Copper Drops @ 33c
Zinc. Cask, 500 to 1000 lbs.....₩ ℔ 10 c
Case, 100 lbs..... " 11 c
Slab..... " 7½c
Brass.—
Roll, No. 6 to 20. ₩ ℔ 36c
" 20 to 30. " 42c
Babbit Metal.—
Sellew & Co.....₩ ℔ 35c
Antimony.....₩ ℔ 17c
Bismuth.....₩ ℔ $4 00
Bars.....₩ ℔ 31c
A I..... ₩ ℔ 19c
Roofing ..... " 17c
Bar.....₩ ℔ 8½c
Copper.—
Sheets.. 6 to 9 lb...₩ ℔ 41c
" 10 to 12 10... " 38c
Braziers 13 lb..... " 35c
Copper Bottoms... " 33c
Sheets.....₩ ℔ 10 c
Case, 100 lbs..... " 11 c
Slab..... " 7½c
Copper.—
Sheathing.....32c
Copper Bottoms.....32c
Planished Copper.—
Sheathing, 14x48.....30c
Boiler Size, No. 7.....41c
" " No. 8.....41c
" " No. 9.....41c
Tinning ₩ sheet, 14x48 No. 7 10c
" " " 8 14c
" " " 9 16c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29c
Bars.....30c
Solder.—No. 1..... 17c
No. 2..... 16c
Bright Wire....dis 37½ %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Russia. No. 9, 10, 11&12. 18½c
W. D. WOOD'S & CO. S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
" 21 to 24 Char'l.. 7 80
" 25 & 26 " .. 8 00

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

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303 Walnut St.,
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The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us, viz.

A. Pardee & Co. { HAZLETON. CRANBERRY. SUGAR LOAF
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Pardee, Bro. & Co. LATTIMER.

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WM. MERSHON, Agent, 111 Broadway N.Y
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The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, c, card rate, 2 % off net.

Nickel.....₩ ℔ $3 50
Sheet Iron.—
Gen. Russia.....₩ ℔ 20c
Planished A.....₩ ℔ 15c
" B..... " 13½c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'fd.
18 to 20.....	4·4c	6·0c	8·0c
22 to 24.....	4·6c	6·1c	8·1c
26.....	4·8c	6·3c	8·3c
27.....	5·0c	6·5c	8·5c

Galvanized Iron.—Full bundles.....dis 20 %
Nos. 18 to 20..... 12c | No. 26..... 14c
22 to 24..... 13c | 27..... 15c
Bar Steel.—Silver, ₩ ℔ 16c ; Crescent, 21c.
Iron Wire.....dis 35 %
Enameled Ware.....dis 45 %
One Piece Corrugated Elbows.....dis 10 %

Charcoal Iron.		Russia Iron.	
4½ inch.....	₩ doz $2 50	4½ inch.....	₩ doz $5 00
5 "	" 3 50	5 "	" 7 00
5½ "	" 4 50	5½ "	" 9 50
6 "	" 5 25	6 "	" 12 00
7 "	" 6 50	7 "	" 14 00

Lender Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

	₩ doz.		₩ doz.
2-inch.....	$1 75	2½-inch.....	$2 75
3-inch.....	2 25	3½-inch.....	3 25
4-inch.....	2 50	4½-inch.....	3 50

Sheet Iron Bread Pans.....₩ ℔ 11c
American Broilers.....₩ doz. $3 50
Tinmeh's Machines.....dis 5 %
Sad Irons.....₩ ℔, 3½c @ 4½c
Brass Kettles.—Ansonia.....50c
Dog Irons.....3c

Nails, Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed.....add 1c ₩ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 5 7 8 9 10
22 20 19 18 17c
Packing—Rubber.....dis 30 @ 35 %
Pencils, Slate—Soapstone.....dis 20 %
30 40 50c. ₩ 100
Case lots.....
Paint—White Lead, U. S. Gov't.....₩ ℔ 9 c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Rope—Manilla, ½ inch and larger.....₩ ℔ 15½c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 52½ %
Flat Head, Brass.....dis 52½ %
Staples—Blind, Boardman s Pat., ½ & ⅝.....₩ ℔ 37c
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 40&10 %
Britannia.....dis 45&10 %
Squares—Steel and Iron.....new list 50 %
Shoes, Horse—H. Burden & Sons.....₩ keg 36 00
Saws—Henry Disston & Sons.....dis 10 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vises—Parallel, Buffalo.....dis 20 %
Ware—French, Tinned ana Iron.....dis 25 %
Stamped ana Japanned.....dis 10 %
Cast Iron Hollow.....dis 33⅓ %
Tin Plates.—Add for each X.....2 50
10x14, IC. Charcoal...$11 25 . 14x20 C. terne.....$10 25
12x12, " ... 11 75 | 20x28 C. " 21 50
12½x17, " ... 10 75 | 20x28 X. " 30 00
14x20, " ... 12 25 |
Pig Tin—Straits.....28c @ 29c
Bar Tin.....30c
Solder.....No. 1, 15c ; No. 2, 14c
Sheet Zinc—
" Lasalle ".....570 ℔ casks
$10 00 10 50 ₩ 100 ℔
Sheets.....$10 00
Iron Wire—Bright and Annealed.....dis 40 %
Coppered.....dis 35 %
Tinned.....dis 15 %
Tinned Broom, { Nos. 20 21 22 / 20c 21c 21c } .....dis 20 %
Copper—Sheathing 14 @ 18 oz.....₩ ℔ 33c
Planished..... ₩ ℔
Bottoms.....₩ ℔ 33c
Bolts.....₩ ℔ 35c
Braziers' Sheets.....₩ ℔ 37c
Sheet Iron.—
18 Common.....$4 95
24 Common.....5 25
24 W. D. Wood & Co., Smooth Finish.....5 90
Am. Russia..... A. B.
15c 12c
Gen. Russia, No. 1 stained.....18c
" " clean.....19c
Galvanized.....dis 15 %

Coke Tin.—
IC, 10x14 Coke.....$9 50
IX, 10x14, Coke 12 25
IC, 14x20, " 10 50
Sheet Zinc.—
Any width.....11c

Copper.—
Sheathing.....32c
Copper Bottoms.....32c
Planished Copper.—
Sheathing, 14x48.....30c
Boiler Size, No. 7.....41c
" " No. 8.....41c
" " No. 9.....41c
Tinning ₩ sheet, 14x48 No. 7 10c
" " " 8 14c
" " " 9 16c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....29c
Bars.....30c
Solder.—No. 1..... 17c
No. 2..... 16c
Bright Wire....dis 37½ %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Russia. No. 9, 10, 11&12. 18½c
W. D. WOOD'S & CO. S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 30
" 25 & 26..... 6 50
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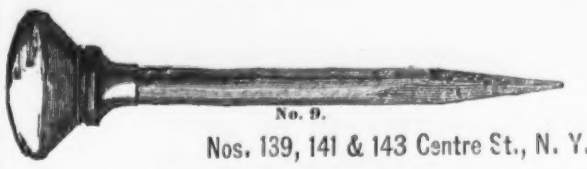
MARKT & CO.,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Hardware Specialties,

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BRIGHT WIRE GOODS,

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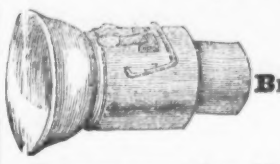
FURNITURE NAILS,



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Wrought Iron and Brass Butts.

Having consignment of one of the largest German manufacturers of **Halter and Coil Chains**, we can offer inducements on these goods.
We shall be pleased to send our new lists and prices to those who will apply.

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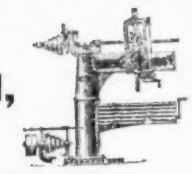

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THREE CLASS PRIZE MEDALS, CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851

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Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel. Also, manufacturer of

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Steel Rails, Tyres, Wheels,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.

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For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

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Unsurpassed, if equaled in quality.

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FOR LOCOMOTIVES, BOILERS AND FIRE BOXES,

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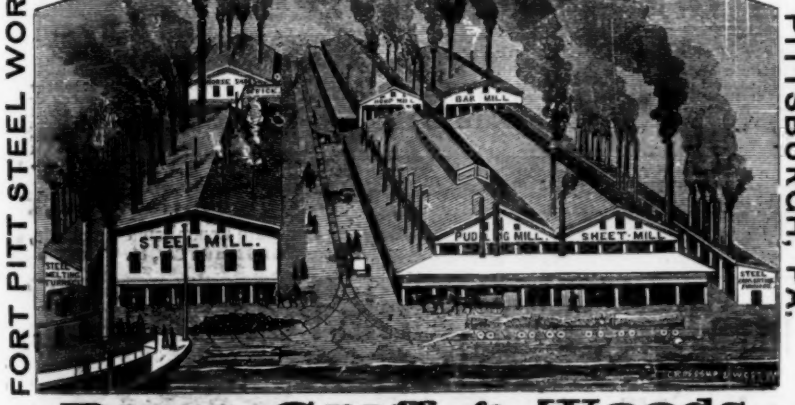

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Reese, Graff & Woods.

CAPITAL - - $500,000.

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COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

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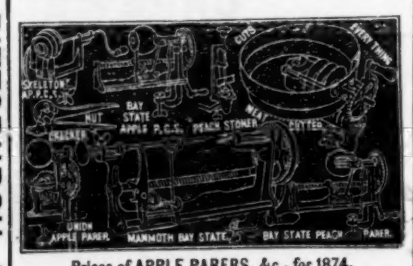
THOS. WYATT, Proprietor.

Buffalo Bellows Factory.

MERCHANTS WILL FIND IT ADVANTAGEOUS to buy from me, as I sell low, and my location enables me to ship at very low rates. No charge for cartage or other incidental expenses, my quotation being the whole cost to the purchaser, except the freight from Buffalo to his location. Please send your orders to

JOSEPH CHURCHYARD,
Clinton, cor. Adams St., Buffalo, N. Y



Prices of APPLE PARERS, &c., for 1874.

Bay State Apple Paring, Coring and Slicing Machines (does all at once)	₩ doz. $15 00
Skeleton Apple Paring, Coring and Slicing Machines (does all at once)	₩ doz. 8 50
Union Improved Apple Parers	" 8 50
Bay State Peach Parers	" 12 00
Peach Stoner and Halver	" 7 00
Meat Cutters	₩ doz. $30 00 and $72 00

"Skeleton" and "Union" in 50 doz. lots, ₩ doz. $8 00. Other kinds included at 1 per cent. discount from list. Terms, 30 days, or 5 per cent. discount if sight draft be made on shipment.

Manufactured by

D. H. WHITTEMORE,
Worcester, Mass.

J. Clark Wilson, & Co., New York, and Wm. H. Cole Baltimore, Agents

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CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l, Good		14x20, IX, Ch'l Best	$15 00
10x14, IC, " Best	11 50	14x20, IXX, "	17 50
10x14 IX, "	14 00	14x20, IXXX, "	20 00
12x12, IC, "	12 00	DC, 100 Plates, "	11 50
12x12, IX, "	14 50	DX, "	14 00
14x20, IC, "	12 50	DXX, "	16 50
Roofing IC, Charcoal, Best		DXXX, "	19 00
Roofing IX, Charcoal	"		11 00
20x28, IC, Charcoal Roofing, Com			18 50
20x28, IC, " Good			21 00
20x28, IC, " Best			21 50
20x28, IX, "			22 00
10x14, IC, Coke Plates			26 50
14x20, IC, "			10 00 @ 10 50
10x20, IC,			10 50 @ 11 00
			16 50

Block Tin.—

Large Pigs	29c	Bars	30c
Small	29c	Straits, 2c. higher.	

Zinc.—Sheet, 500 to 1000 lb. Casks 9¼c
Loose Sheets 10c
Slab Zinc or Spelter 6¾ to 7¼c

Copper.—Bottoms 33c
Sheathing 33c
Planished 36c
" Boiler lengths 40c
Ingot 24c to 26c
Bolt 40c

Braziers' Sheets.—

30x60, 6 to 10 lbs.	₩ lb 41c	30x60, 15 to 100 lbs.	₩ lb 35c
30x60, 10 & 12 lbs.	" 38c		

Solder.—F. S. & Co.'s make.

Best Fine	22c	Roofing	18c
No. 1	20c	Braziers' or Spelt. Sold.	35c

Antimony 18c
Babbit Metal—F. S. & Co.'s 16c
No. 2 14c

Sheet Iron.—

	Common.	Com.	Smooth Charcoal.	Smooth Juniata.
No. 24	5 c	6 c	7½c	9½c
25 & 26	5½c	6½c	7¾c	9¾c
27	5¾c	6¾c	8 c	10 c

Galvanized Iron dis 20 %

No. 16 to 20	12c	No. 22	15c
21 to 24	13c	23	16c
25 & 26	14c		

Russia Iron.—

Perfect	28c	No. 1 Stained	19c
		In sheets, 1c. higher.	
		B	12c
		In sheets, 1c higher.	

American Russia.—
A 15c

Lead.—

Pig	7¼c	Lead Pipe, in full coils	8¼c
Bar	8¾c	Lead Pipe, when cut	8¾c
		Sheet Lead	8¾c

Wire—Bright dis 35 %
Coppered dis 30 %

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 136 to 164 Oliver St.)

Augers.—Watrous Ship dis 10 %
L'Hommedieu Ship dis 15 %
Axes.—Forester's Favorite, Bronzed $12 00
Blue Jackets, Blue 11 50
Excelsior, Black 11 00
Chopper's Prize, Bronzed 10 50
Red Cross, Red 10 00
Red Cross, Handled 12 50
Boy's Handled Blue Jackets 12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50, B (No. 1) $2 00, C (No. 2) $1 50 ₩ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1 $1 70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 36, No. 1 1 90
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1 2 38
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1 2 50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1 3 38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1 3 50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1 per pair, 70c.
Common, 6, No. 1 60c.
Blind Hinges.—Washburn's per hundred set $9 50
Blind Fasts.—Washburn's per hundred set $5 75
Bolts.—Carriage, Phila., "Girard Works" dis 50&10 %
Borax.—Best Refined ₩ lb 14c
Borers.—Angle, Backus' dis 30 %
Boring Machines.—Angle each $4 75
Common, Snell's quality each 3 75
Braces.—Barber's dis 40&5 %
Backus' dis 50 %
Spofford's dis 40 %
Amidon dis 45 %
Brass Faucets.—L. F. & C. dis 25 %
Butts.—Union Drilled Loose Joint dis 60&10 %
" " Wire Fast Joint dis 55 %
" " Acorn Loose Joint dis 60&10 %
Brass Butts dis 30 %
Wrought Table Butts and Back Flaps dis 30 %
Wrought Narrow Butts dis 30 %
Can Openers—Sprague's dis 50 %
No. 1, Iron Handle $4 00
No. 2, Wood Handle 4 50
Cartridges.—" U. S. Cartridge Co." dis 50&10 %
Chisels.—"Buck Bros." Shank Goods add 20 @ 22½ %
Socket add 22½ @ 25 %
Coal Hods dis 35 %
Fancy Japanned, No. 4, 15 in., $3 00; 5, 16 in., $3 00; 6, 17 in., $10 00.
Fancy Galvanized, No. 4, 15 in., $11 50; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Galv'd, No. 4, 15 in., $15 00; 5, 16 in., $16 00; 6, 17 in., $17 00.
Morning Glory, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Morning Glory, Galv'd, No. 4, 15 in., $15 00; No. 5, 16 in., $16 00; No. 6, 17 in., $17 00.
Compasses and Dividers.—Bemis' dis 35 %
P. S. & W dis 25 %
Cordage.—Manilla (usual trade dis.) ₩ lb, 15c
American Tarred Hemp Lath Yarn ₩ lb, 10c
Corn Hooks per doz $2 75
Cow Ties dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle $3 70
No. 35, " 3 " No. 6, " Snap 3 90
No. 40, " 3½ " No. 5, " Toggle 4 25
No. 45, " 3½ " No. 5, " Snap 4 40
No. 50, " 4 " No. 4, " Toggle 4 85
No. 55, " 4 " No. 4, " Snap 5 00
No. 60, " 4½ " No. 3, " Toggle 5 60
No. 65, " 4½ " No. 3, " Snap 5 80
Crow Bars.—Iron. Steel Points ₩ lb, 5½c
"Sweet" Steel Bars ₩ lb 11c
Brown's Steel Bars ₩ lb 10c
K. P. & Co. Extra Drill Steel ₩ lb 15c
Dividers.—Cook's Nickel Plated dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12 00 dis 25 %
No. 8, " outside " $18 00 dis 25 %
Torrey's $4 00
Emery.—Alden ₩ lb 6½c
Wellington Mills ₩ lb 10c
Files.—Earl Smith & Co.'s English $5 to £ gold
American $5 to £ currency, less 12½ %
Nicholson $5 to £ currency, less 1.½ %
" Regular Taper dis 12½&5 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62; 4, $1 88; 4½, $2 13; 5, $2 50.
Funnel Irons.—$2 50 2 50 2 50 3 25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3 50 3 75 4 00
5, 5½, 6 inch.
Hammers.—Maydole dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $8 75
" " " " " bell face, No. 1, $11; 1½, $9 75.
Hangers & Rollers.—Novelty dis 30 %
Anti-Friction $1 75 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co. dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling 0, $4 75; 1, $5 25; 2, $5 75
Claw 1, 5 75; 2, 6 25
Lathing 1, 5 75
Axe Pattern 1, $7 00; 2, 7 50
Broad 0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6, $14 75.
Hinges.—Strap and T, Stanley Works dis 23½ %
Plate, Loose and Fast Joint ₩ lb 7½c
Wrought Screw Hook ₩ lb 8c
Hoes.—Ely Bialch & Co. M., B. & D.'s list, 1874 dis 25 %
Remington, M., B. & D.'s list, 1874 dis 30 %
Lanterns.—Tubular No. 0 $9 50
Guarded, No. 70, (with kerosene oil and candle burners) 6 25
Lead.—Sheet and Pipe 9c—less 10 %
Locks.—P. & F. Corbin new list dis 45&5 %
Nashua dis 45&5 %
Manure Forks.—
Myers & Ervien, M., B. & D.'s list, 1874 dis 25 %
Peck, Clark & Co., " " dis 25 %
Shumway & Co., " " dis 30 %
Mattocks.—K. P. & Co., axe finish, long cutter $13 75
Short cutter 13 50
Meat Cutters.—"Miles's" Challenge dis. 20 %
No. 1, $22 00; 2, $30 00; 3, $40 00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ₩ lb.
Nails.—10d and larger unsettled
Nail Pullers.—Little Giant—Small per doz., $22 00
Little Giant—Large " 30 00
Padlocks.—Wilcox dis 50&2 %
All Brass, 2½ inch, 2 keys, job lots $9 00
Picks.—K. P. & Co., Polished Points—
5 to 6 per doz $9 00; 6 to 7, $9 50
Pins.—Universal Hat and Coat all wood—
2 in. ₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 25 %
Potato Digger.—
"Partridge," 6 square tine ₩ doz $12 00
Shumway & Co., 6 round tine " 9 00
Pulley Blocks.—"Best Boston Make" net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	85c.	$1 00	$1 13 each.
Double,	$1 00	1 12	1 25	1 60 "

Inside Iron Strapped Blocks—

	5	6	7	8	9	10 inch.
Single,	$1 00	1 13	1 38	2 00	2 25	1 75 each.
Double,	1 88	2 00	2 63	3 63	4 00	5 00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1 25	1 50	1 65	2 50	2 65	3 50 each.
Double,	2 50	3 00	3 38	4 63	5 00	6 50 "

Plated Ware.—Rogers bros. new list dis 40&10 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels dis 50 %
No. 2, First Quality Levels dis 60&10 %
No. 3, Iron Pocket " dis 35 %
No. 4, Level and Plumb Glasses dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge dis 50&10 %
No. 6, Improved Iron Bench Planes dis 20&10 %
Pocket Knives.—Conn. Cutlery Co. new net list
American Shear Co. dis 33½ %
Rakes.—Cast steel, garden dis 30 %
Malleable dis 25 %
Rail Road Door.—For Novelty and Anti-Friction Hangers per foot 7c., dis 33 %
Rivets.—Blacksmith dis 25 %
Carriage, oval head, Nos. 1, 2, 3, 4, 5, 6, 7, 8
13 13 14 14 15 16c ₩ lb net
Rubber Moldings.—"Harmon's" dis 10 %
No. 2, for Windows per foot, 5c
No. 3, for Doors per foot, 10c
No. 4, " per foot, 12c
Sad Irons.—Bliss & Drake ₩ lb 4
Sand Paper—0 to 2, $4 25; 2 to 3, $4 75 dis 10 %
Saws.—*Rand and Punch*—
Wheeler, Madden & Clemson's, same list as "Disston's" dis. 15 %
Disston's dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut each, $2 25
Boynton's genuine Lightning X Cut per ft., 60c
" " One Man X Cut each, $2 25
Circular—Wheeler, Madden & Clemson's dis. 25 %
Mill— " " dis. 25 %
Screws.—American Screw Co. revised list dis 52½ %
Scythe Stones.—
"Willoughby Lake," first quality ₩ gross $6 50
" " second quality " 3 00
Shovels.—O. Ames new list dis 12½ %
M. B. & D. new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England $4 50
Snow, Malleable Iron Tip, long Handle—Agents for New England 5 50
Sifters.—Coal, Rice, &c $12 00
Spading Forks.—M. & E. dis 25 %
Stone Pickers.—"Partridge," original, ₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's $400 per doz
Traps.—Oneida dis 20&5 %
Blake's dis 50 %
Vises.—L. F. & Co.'s Solid Box, Blacksmith ₩ lb 13c
Parker's Parallel dis 10 %
Backus dis 25 %
"Howards." Parallels dis 20 %
Wardrobe Hooks.—Wire to drive ₩ gross $1 00
Weather Strips.—"Harmon's" per doz $5, dis 10 %
Weights.—Window Weights ₩ lb 2½c
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black ₩ ft 6c
Wrenches.—Genuine Wrenches, A. G. Coes dis 40&5 %
Wringers.—
Novelty and Universal } Tub No. 2 } market unsettled
Eureka. per doz $40 00
Novelty Bench, No. 4 market unsettled

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₩ box

I. C. Char. 10x14	@ $11 50		
I. C. Char. 10x14	9 50		
Char. Roof. IC, 14x20	11 25		
Coke " IC, 14x20, 10	25		

Pig Tin.—₩ lb

Banca	30c	Straits	25c
English	24c		

Zinc.—Sheet ₩ lb 10c
Iron.—Sheet Iron, Russia " 15c
Sheet Iron, English " 5 c
" " American Refined " 5¾c
" " Galvanized " 10c
Plate Iron " 3¾c
Swedish and Norway Bar Iron, gold ₩ ton, $122 50
" " Shapes, gold 127 50
Norway Nail Rods, first quality, gold 145 00
" " second " " 135 00
Best Refined Bar Iron 95 00
The "Burden Best" Iron 98 00
American Pig Iron, Foundry, No. 1, x 33 00
" " " No. 2, x 31 00
" " Gray Forge 28 00
Scotch Pig Iron ₩ ton 36 00 @ 39 00
Wrought Scrap Iron 35 00

Steel.—

Eng. Tool	18c	German	10c
American Tool	14 c	Spring	7½c
" Mach	10c	Tire	6½c
Pesemer	7½c	Sleigh Shoe	4¾c
		Toe Calk	7½c

Copper.— ₩ lb
Sheathing 33c
Bolt 33c
Ingot 22c
Lead.— ₩ lb
Pig 6¾c
Sheet & Pipe, 8 4c, dis 10 %
Spelter ₩ lb 8c
Antimony ₩ lb 14c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage ₩ lb, gold, 13c
Peter Wright's " 14c
Wilkinson's " 12½c
Apple Parers.—Conqueror ₩ doz, $5 00
Lightning 9 00
Turn Table 9 00
Axes.—Hunt's ₩ doz $13 00 @ 13 50
Lippincott's " 12 00 @ 13 00
Lippincott's Pioneer " 13 00 @ 13 50
Simmons' " 12 00 @ 13 00
Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles new list net
Swelled Taper Axles new list net
Concord Axles new list net
Red Jacket Axles new list net
Common Axles, 1½ inch and upward ₩ lb 8¾c
" " less than 1¼ inch " 8¾c
Bellows.—"Brass St. Louis make" 60 ₩ n. dis 20 %
Bells.—Troy, Church ₩ lb, 4c
Light Brass Hand dis 30 %
Moore & Co.'s dis 20 %
Bolts.—Arms, Bell & Co.'s Machine dis 30 %
Arms, Bell & Co.'s Carriage and Tire dis 30 %
Cast Butt Hinges.—Western Butt Co.'s—
Narrow Fast Joint dis 35 %
Broad Fast Joint dis 50 %
" Loose " dis 60 %
Reversible dis 50&10 %
" Japanned and Silver Tipped dis 50 %
Loose Joint "Acorn" " dis 55 %
Lull & Porter's Blind dis 50 %
Wrought Butts.—Narrow dis 25 %
Reversible dis 25 %
Broad dis 30 %
Chain.—Eng. Coil..3-16 ¼ 5-16 ⅜ 7-16 ½ in.
15 11 10 9½ 9 8c gold
Trace 6½-10-2 85c "
7-10-2 7½c "
German Coil and Halter revised list add 10 %
Chisels.—Socket, Firmer or Framing dis 60 %
Clothes Wringers.—Crown ₩ doz $60 00
Novelty " 60 00
Universal " 60 00
Monitor " 60 00
Corn Cutters or Hooks.—Solid Steel ₩ doz $4 00
Corn Knives.—Dunn Edge Tool Co.'s Clip ₩ doz $5 75
Disston's " 6 00
Crow Bars.—Steel Pointed ₩ lb 7c
Cutlery.—J. Russell & Co.'s, Lamson, Goodnow & Co.'s, Landers, Frary & Clark's, } at minimum list, net
Files and Rasps.—Nicholson's Files $5 00 less 10 %
Butcher's Mill $6 75
Heller's & Bros Horse Rasps dis 40 %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks dis 30 %
" " " Standard Hoes dis 30 %
" " " Planter Eye Hoes add 10 %
Winsted's Planter Eye Hoes add 10 %
Hammers.—Yerkes & Plumb dis 5 %
Masons' Hammers ₩ lb 20c
Smith Hand Hammers " 35c
Handles.—Axe Extra. $2 75 No. 1. $2 25 No. 2. $1 75 No. 3. $1 00
Pick Extra. $2 50 No. 1. $2 00 No. 1½ $1 75 No. 2. $1 25
Smith & Montross Fork, Hoe and Rake dis 20 %
Harrow Teeth.—1 inch iron ₩ lb 4½c
⅞ and ¾ inch iron " 4¾c
⅝ inch iron " c
Barbed or Headed ½c extra
Hatchets.—Hunt's dis 15 %
Simmons' dis 15 %
Hay Knives.—Lightning ₩ doz $8 00
Dunn Edge Tool Co.'s ₩ doz $14 50—dis 15 %
Fisher's " 16 50—dis 10 %
Hinges.—Strap and T—St. Louis make dis 25&10 %
Horse Nails.—Ausable 22c rate
Northwestern 22c "
National Patent Pointed 21c "
" " " Extra Finished 22c "
Horse Shoes.—R. I. (Perkin's pat.) ₩ keg $6 5
Burden's " 6 50
Mule Shoes " 7 50
Rhode Island Trotting Shoes " 9 00
Locks and Latches.—
Jones & Nimick's revised list dis 40 %
Moorhead, Adams & Co. revised list dis 40 %
Norwalk Lock Co.'s revised list dis 40 %
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks ₩ doz. $14 25 @ 15 25
" Grub Hoes, Oval Eye ₩ doz. 10 25 @ 12 00
Nails.—Wheeling $3 75 rates
Orders for 100 kegs 10c ₩ keg less.
Picks.—Klein, Logan & Co.'s K. K. and Clay ₩ doz. $11 00
Klein, Logan & Co.'s Coal " 8 50
" " " Poll " 11 00
" " " Stone " 14 50
" " " Tamping " 17 00
Planes.—Ohio Tool Co.'s dis 30 %
Sciota dis 40 %
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32 dis 20 %
Barton's Patent ₩ doz $25—dis 20 %
Vaughn's " " 25—dis 10 %
Sad Irons.—Monitor Brand, Silver Polished ₩ lb 4c
Sash Weights.—Standard Solid Eyes ₩ lb 3¾c
Saws.—Disston's dis 10 %
Hubbard, Lippincott, B. & Co.'s dis 10 %
Branch, Crooks & Co.'s dis 10 %
Livingston's Patent Buck dis 15 %
Screws.—American Screw Co.'s revised list dis 45 %
Scythes.—Dunn Edge Tool Co.'s new list dis 25 %
Paris Furnace Co.'s dis 30 %
Scythe Stones.—No. 1 Ind'a Pond ₩ gr's, $7 00
Extra Indian Pond " 7 50
Premium " 9 50
Diamond Grit " 13 50
} dis 35 %
Shovels, Spades and Scoops.—
Ames' dis 10 %
Lippincott's dis 20 %
Rowland's Maxwell revised list dis 15 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished ₩ lb, 15c
Solid Cast Steel " 35c
Spaths and Cradles.—Seymour Mfg. Co.'s dis 20 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express dis 10 %
Blue Seat Springs new list dis 15 %
Tacks.—Norway Tack Co.'s ½ weight dis 12½ %
Brads ½ weight dis 50 %
Thimble Skeins.—Pump & Skein Co.'s dis 60 %
Traps.—Newhouse Patent dis 45 %
Vises.—Solid Box ₩ lb 16c
Wilson Mfg. Co.'s dis 15 %
Wrenches.—Coes' Genuine dis 33½ %
Coes' Pattern dis 50 %
Taft's dis 60 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Char	$11 00@11 50	IX, continuous, 20 in. x 200 ft	
IX, 10x14, "	14 00	IC, 10x14, best	
IC, 12x12, "	12 00	Coke	$10 00
IX, 12x12, "	14 50	IC, 10x14, good Coke	10 00
IC, 14x20, "	12 50	IC, 10x20	10 00
IX, 14x20, "	15 00	IC, 14x20	10 50
IC, 14x20, Terne	$10 75@11 00	IC, 20x28, Coke Lead	8 50
IX, 14x20, "	13 50	IC, 10x14, punch'd for Safes	10 00
IC, 20x28, "	21 00@22 00		
IX, 20x28, "	25 00@26 00		
IC, continuous, 20 in. x 200 ft			

Block Tin.

Large Pigs Straits	28c	Bars	28c
Small " English	27c		

Sheet Zinc.

Casks	₩ lb 10c	Sheet	₩ lb 10¼c

Solder.

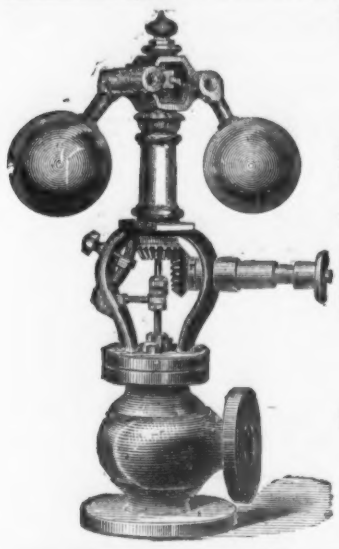
No. 1, Refined, in bars or plate			$17c
No. 2, " " "			16c
Pig Lead			7¼c

Sheet Copper.—18 to 100 lbs. Sheets 30x60 28c
14 to 16 lbs., Sheets 20x60 33c
10 to 12 lbs., " and 30x72 36c
6 to 9 lbs., " 39c
Tinned, 14 and 16 oz. 14x48 31c
Planished, 14 and 16 oz. 14x48 37c
" No. 7, 8 and 9 39c
Copper Bottoms 33c

Sheet Iron.—

	Com'n.	Sm'th.	Char'l.	Jun'a.
No. 16 to 20	4¾c	5¾c	7¾c	9¾c
No. 22 to 24	4¾c	5¾c	7¾c	9¾c
No. 26	5 c	6 c	8 c	9¾c
No. 27	5¼c	6¼c	8¼c	10c

Galvanized Iron dis 20 %
Iron Rivets dis 25 %
Iron Wire dis 30 %
Coppered Market Wire dis 30 %
Copper Rivets and Burs dis 25 %
Russia Iron.—Nos. 9, 10, 11 and 12. ₩ lb 20c
No. 1 stained, ₩ lb 18c
Imitation Russia, ₩ lb 13c
Retinned Stamped Ware dis 35 %



TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

Shive Governor Co

BETHLEHEM, PA.

ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR.

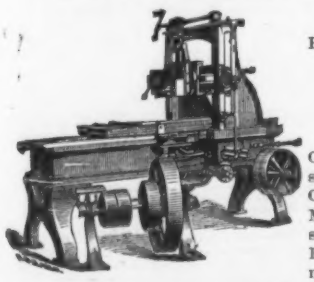
The Best and Cheapest Watcher of the Watchman made

PRICE ONLY $15.

Circulars sent free.

The Pratt & Whitney Co.,

Hartford, Conn.,



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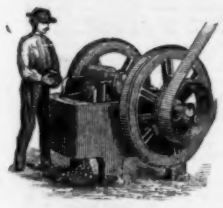

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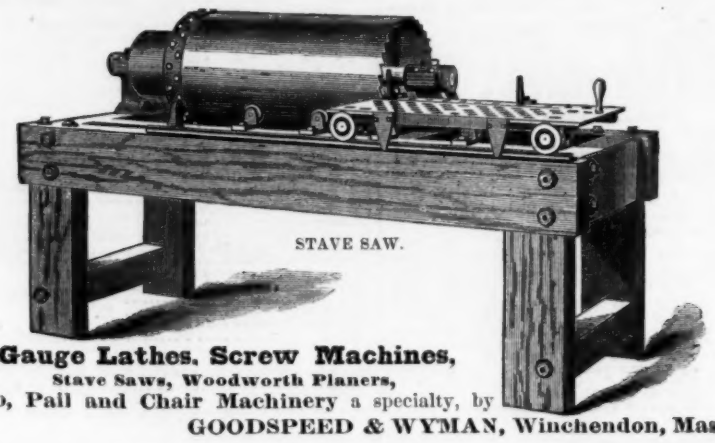

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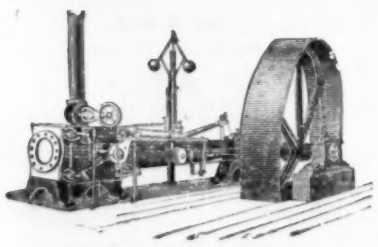

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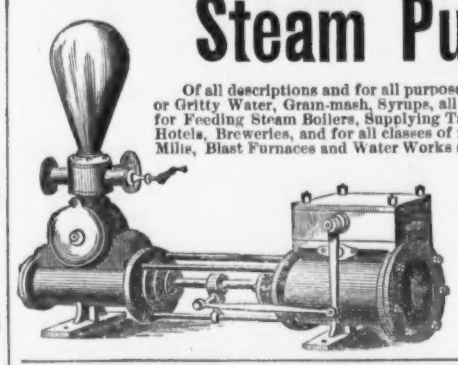

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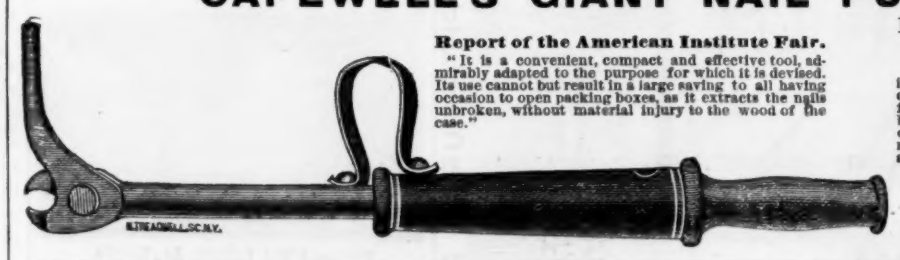

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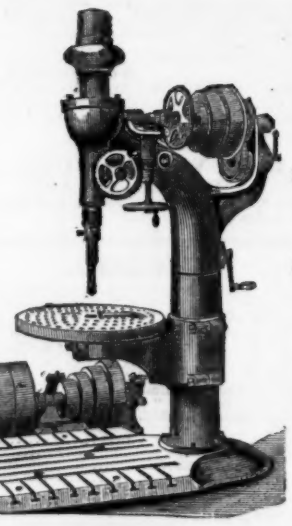

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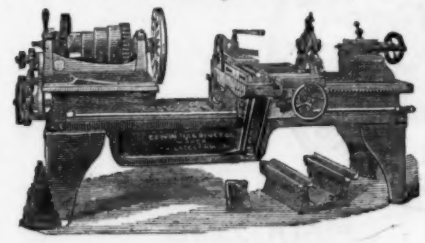

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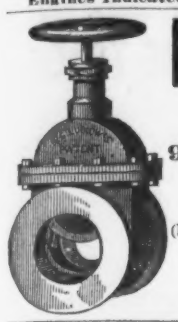

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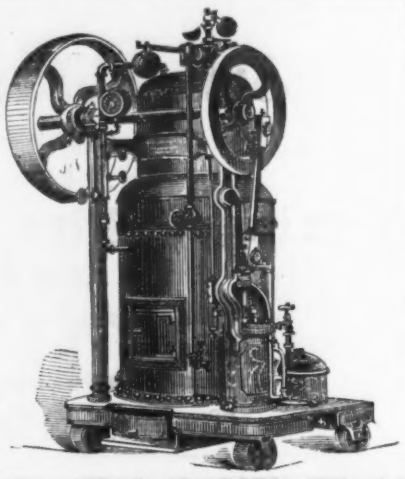

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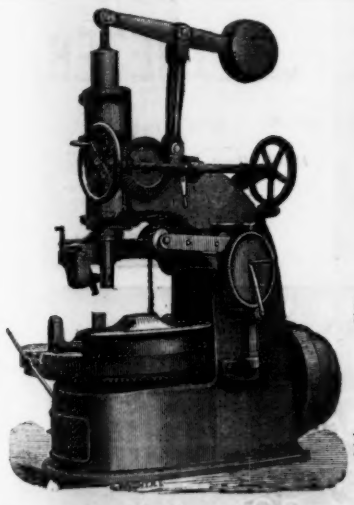

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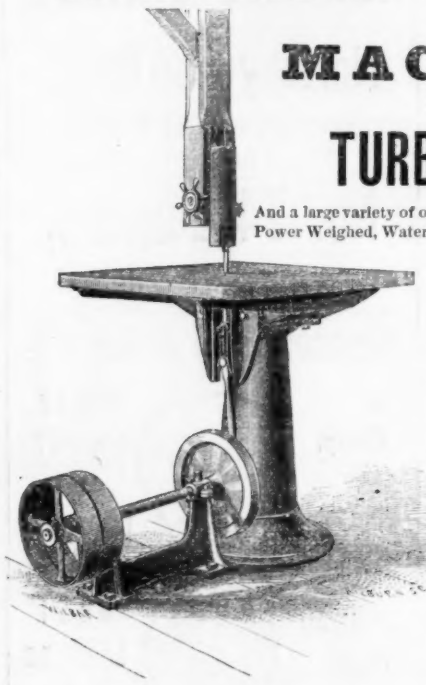

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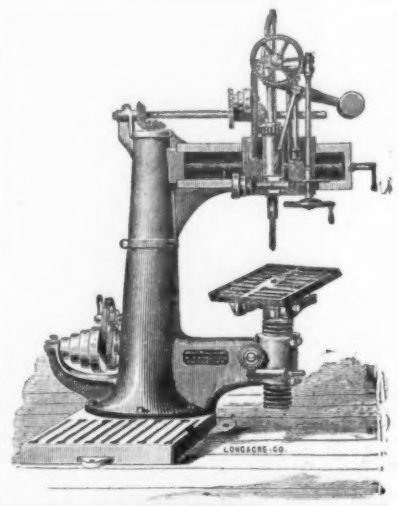

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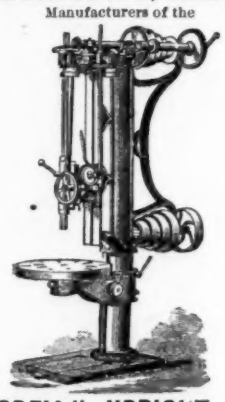

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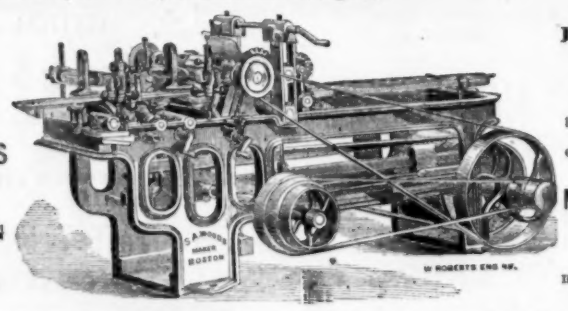

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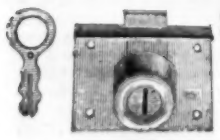

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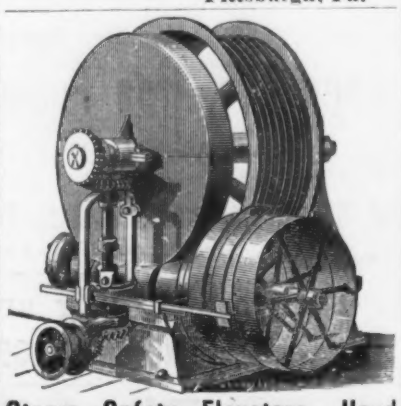

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